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FOUNDRY TRADE JOURNAL

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WITH WHICH IS INCORPORATED THE IRON AND STEEL TRADES JOURNAL

VOL. 106
No. 2208
Registered at the G.P.O. as a Newspaper

FEBRUARY 5, 1959
Offices: John Adam House, John Adam St., London, W.C.2

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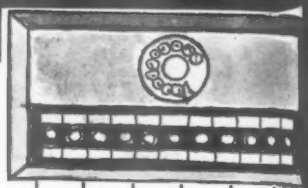

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FOUNDRY
TRADE JOURNAL

Vol. 106. February 5, 1959 No. 2208

Established 1902
Incorporating
IRON & STEEL TRADES JOURNAL

Single copy 1s.*; by post* 1s. 4d. *Annual subscription: home* 52s.*, abroad* 60s. *(prepaid)*

Editor:
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Circulation Manager: E. T. GRIFFITHS

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G. P. ELLIOTT (Northern Area)
T. H. SMITH (Scotland)

The FOUNDRY TRADE JOURNAL is the official organ of the British Steel Founders' Association; Association of Bronze & Brass Founders; the Light Metal Founders Association; Foundry Trades' Equipment & Supplies Association; and the National Society of Master Patternmakers.

AN INDUSTRIAL NEWSPAPERS PUBLICATION

Published Every Thursday by Industrial Newspapers, Limited

BARRINGTON HOOPER, C.B.E.
Chairman and Joint Managing Director

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JOHN ADAM HOUSE,
17-19, JOHN ADAM STREET,
ADELPHI, LONDON, W.C.2

Telephone: Trafalgar 6171 *(Private Branch Exchange)*
Telegraphic Address: "Zacatecas, Rand, London."

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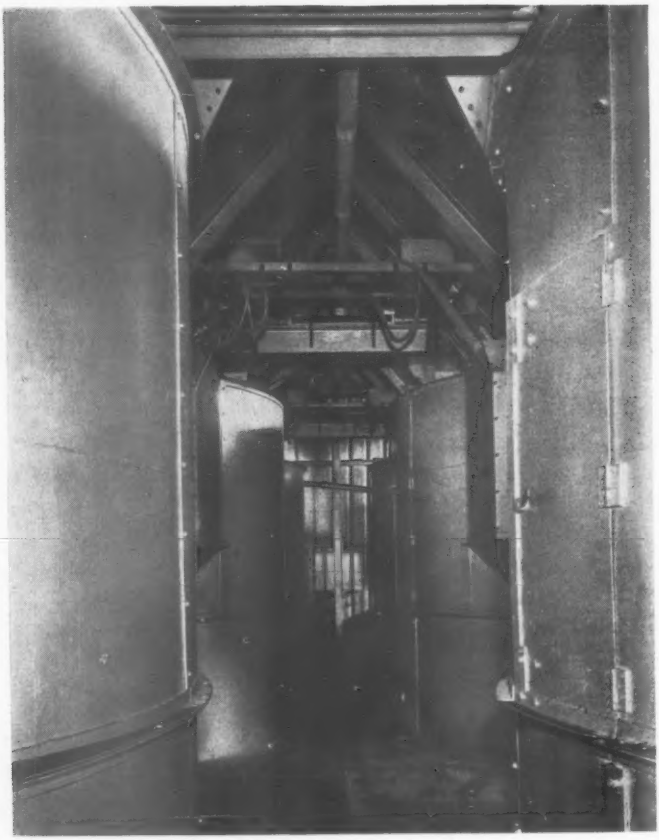

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FOUNDRY
TRADE JOURNAL
Vol. 106 FEBRUARY 5, 1959 No. 2208

Accident Prevention

Elsewhere in this issue, there is printed, by courtesy of the Amalgamated Union of Foundry Workers, a list of accidents against which compensation was paid. By and large, they were preventable accidents and the message is quite clear: It requires in every foundry of any size an enthusiastic person to act as safety officer. He should be as close to the head as possible and, through his missionary zeal, be able to inspire everybody within the organization to follow his lead. Such a person is an asset of great value, and one which, though there is no place for it in the balance sheet, does help the prosperity of a company—in exactly the way that invisible exports enhance a country's financial structure.

We noticed amongst the accidents listed quite a few related to damage to fingers and knuckles. This, too, must have been noticed by the officials of the Factory Inspectorate, as, in their quarterly magazine, there is described and illustrated a simple hand-guard for wheelbarrows. Only too often, conditions arise that a man catches his hand against a wall or stack of pig-iron. Whilst extraordinary happenings (such as a man being trapped in a mould stove or falling into a sand-mill) receive much publicity, in total they are not half so important as the mass of accidents due to falling down, receiving a blow on the head from some object falling from above, or being burnt by liquid metal.

Much thought has been given to prevention of the day-to-day type of accidents, which can indeed turn out to be serious. Good-housekeeping and all that it involves is the major factor in the reduction of industrial accidents, but the regular wearing of safety clothing and goggles is of outstanding importance. We are aware of the old objections raised, in that protective devices sometimes introduced greater hazards than they eliminated, but we believe that these disabilities have now been removed. We close on the note upon which we opened, and that is, if the managing director cannot himself raise any interest in the subject of accident prevention, he should and must find someone who can. Just as a director may hate costing or sales, he does normally find someone to undertake these jobs, and so, too, he must find, amongst his staff, an enthusiast for accident-prevention work.

Dinners

LANCASHIRE BRANCH

The annual dinner/dance of the Lancashire branch of the Institute of British Foundrymen was held at the Grand Hotel, Manchester, on Saturday, January 24, with Mr. H. Booth presiding and Mr. F. A. Harper acting as toastmaster. Following the loyal toast, Mr. C. H. Wilson, senior vice-president of the Institute, proposed the "Lancashire Branch," to which the branch president replied. The toast to "The Visitors" was proposed by Mr. C. M. G. Wallwork, senior vice-president of the branch, and responded to by Mr. H. Oliver, the chief guest; Mr. R. L. Handley proposed the toast to "The Ladies," to which Mrs. Booth replied. Mr. F. W. Nield suitably responded to the toast of "The Branch Secretary," proposed by Mr. H. Buckley.

During the evening there was dancing to the orchestra of the Grand Hotel with Mr. F. A. Harper and Mr. R. Masterton very capably acting as "masters of ceremonies." Mr. Masterton also officiated, together with Mr. G. C. Studley, at the whist drive which was arranged for the afternoon immediately preceding the dinner/dance.

LONDON BRANCH

The year's annual dinner of the London branch of the Institute, attracted an attendance of about 330 and was held in the Grand Hall of the Connaught Rooms, W.C.2. The president, Mr. D. E. B. Barnard, with his lady, received the members and guests, supported by the national president, Mr. A. E. Peace, and Mrs. Peace. At speech time, after the loyal toast, the president gave a personal welcome to his own party followed by mention of distinguished guests amongst his audience, including the junior vice-president, Mr. G. R. Shotton, the secretary, Mr. G. Lambert, the Birmingham branch president and secretary, and several past branch-presidents, most of whom were accompanied by their ladies. Mr. A. E. Peace proposed the toast to "The Institute" coupled with that of the "Guests and Ladies" and Mr. Barnard replied. The evening concluded with entertainment by the "Dazzle Cabaret" and dancing until midnight. The whole function was compered by Mr. Ken Kenyon and organized by Mr. R. Buxton, the social secretary.

BIRMINGHAM BRANCH

The Botanical Gardens, Edgbaston, Birmingham, was again the venue for the annual banquet of the Birmingham branch of the Institute, which took place on Friday, January 23. The main toast of the evening, the "Institute and the Birmingham Branch," proposed by Mr. Austin Morley (managing director, W. & T. Avery, Limited), was responded to by Mr. D. Moir, branch president, and to the toast of "The Guests," proposed by Mr. J. Hird, the president of the Institute, Mr. A. E. Peace replied. Frank Carter and his orchestra provided the music for the dancing which continued until 2 a.m., the joint masters of ceremonies being Mr. M. M. Hallett and Mr. D. F. Bailey.

AN UNUSUAL METHOD of boosting exports has recently been exploited by the General Export Association of Sweden. This Association arranged with the Swedish Transatlantic Line for 250 Swedish firms to exhibit their products on board the m.s. Elgaren. This ship has recently returned to Sweden after touring South and East African ports. Amongst the firms which exhibited was Atlas Copco A.B., who in fact had the largest stand on board.

Forthcoming Events

FEBRUARY 10

Institute of Vitreous Enamellers

Scottish section: The following short papers will be presented:—"Enamelling Cast Iron," by R. M. Watters; "Enamelling Sheet Iron," by I. W. Murdoch; "Cast Iron for Enamelling," by A. Anderson; "Production of Castings," by J. A. McIntosh; and "Abrasives," by G. B. Buchanan. Meeting will be held at the Plough Hotel, Stenhousemuir.

Institute of British Foundrymen

Coventry and district section: "Production and Use of S.g. Iron," by W. W. Braidwood, 7.30 p.m., at the Coventry Technical College, Room A.5.

Incorporated Plant Engineers

Manchester branch: "History of Rolls-Royce," by C. W. Morton, 7.15 p.m., at the Engineers' Club, Albert Square.

FEBRUARY 11

Institute of British Foundrymen

West Riding of Yorkshire branch: "Aluminium Castings," by J. Vickers, 7.30 p.m., at the Bradford Institute of Technology.

Incorporated Plant Engineers

Western branch: "Industrial Electronics," by E. Heys, 7.15 p.m., at the Grand Hotel, Broad Street, Bristol.

Institution of Production Engineers

Eastern region: "Manufacture of Tubing," illustrated by a film. 7.30 p.m. in the Sexton Room, Assembly House, Norwich.

South Essex section: "Epoxy Resins," by A. B. Cameron. 7.30 p.m., at the Southend-on-Sea Municipal Technical College.

National Society of Master Patternmakers

Visit to the docks of the Manchester Ship Canal Company, commencing 2.30 p.m. at the main entrance to the docks in Trafford Road, Salford.

FEBRUARY 12

Institute of British Foundrymen

Beds and Herts section: "Behaviour of Moulding Sands at High Temperatures," by W. B. Parkes, 7.30 p.m., at W. H. Allen, Sons & Company, Limited, Bedford.

Liverpool Metallurgical Society

"Russian Steel Industry," by R. Wilcock, 7 p.m., in the library of the Department of Metallurgy, University of Liverpool, 146, Brownlow Hill. (Joint meeting with the Iron and Steel Institute.)

FEBRUARY 13

Institution of Production Engineers

Ipswich and Colchester section: "Controlled Output through a Method of Collective Incentive Payment," by R. H. Pope, 7.30 p.m., at the Golden Lion Hotel, Cornhill, Ipswich.

Manchester Association of Engineers

"Marine Salvage and Salvage of the Empress of Canada," by W. R. Colbeck, 6.45 p.m., at the Engineers' Club, Albert Square.

FEBRUARY 14

Institute of British Foundrymen

Newcastle and district branch: "A Modern Foundry for the Manufacture of Small Steel Castings by New Moulding Techniques," presented by R. F. Horton and T. Marsden. 6 p.m., at the Neville Hall, Westgate Road, Newcastle-upon-Tyne.

Scottish branch: "Safety in the Foundry," by H. P. Miller. 3 p.m., Royal College of Science and Technology, George Street, Glasgow.

East Midlands branch: "Metallurgical Considerations Governing Choice of Melting and Annealing Plant for a New Malleable Foundry," by H. G. Hall, F.I.M., 6 p.m., at the College of Technology and Commerce, Leicester.

A SPECIAL FEATURE at the biennial Safety and Factory Efficiency Exhibition to be held in Birmingham from June 19 to 26, will be devoted to the building industry. Full details may be obtained from the SAFE exhibition organizer at 71 Broad Street, Birmingham 15.

Limited Mechanization of the Green-sand Bay of a Batch-production Foundry*

By William Y. Buchanan, F.I.M.

The Author, after a brief resumé of his opinions on mechanization, discusses its application to the green-sand bay in the foundry with which he is connected. In this first section of his paper he describes the design and erection of the cupola furnace, and gives an account of the charging equipment installed, the working conditions of the foundry personnel, and the metal-melting rate which was achieved.

If 50,000,000 castings had to be made over a period of say 30 years or so, especially if there were but a few sizes, it would be quite possible to lay out a new foundry to suit the product, employing automation techniques to the full. It is interesting to reflect that automation increases both the advantages and the drawbacks of mechanization. Progressive foundrymen use mechanization as far as they can, but in the absence of a reasonably large and steady demand, there is a serious danger of over-mechanization.

In most cases, where output justifies it, the required method is obvious. First, the plant manufacturers specializing in such work are consulted. Then, when the plant is operating, the number of moulds per hr. which has been achieved is checked and the bill is paid. The large well-mechanized foundries are interesting to visit, and give a deceptive appearance of easy running when things are going well, due to the fact that each operation follows the other with more or less precision timing. However, this appearance of easy running is not obtained without a great deal of time and thought in the early stages, and one of the more difficult problems is the human factor. In foundries of the jobbing type, a good workman is by far the best "machine" which one can possibly get, and his goodwill and co-operation can still be cultivated with profit, even if this is the only guiding principle. Small foundries obviously cannot apply much mechanization when work of a very varied nature is undertaken. Indeed, the varied nature of standard products in relatively large tied foundries makes mechanization difficult, because of the long-term repayment of capital outlay. The product is also planned to suit the machine shop, assuming the foundry to be just another department.

Original Layout at Author's Foundry

The manufacture of lathes, as carried out in the Author's foundry, required sets of castings varying from 33 ft. long and weighing about 7 tons, down to those of 2-in. length weighing ½ lb. In such a case, at best, one could only group the castings into certain box sizes, the smallest being 20 in. by 12 in., and get as many patterns as possible into this size of box—the number varying between one and 20. This type of box was used in conjunction with a jolt/squeeze pattern-draw machine, or a plain squeeze machine. One man operated each machine, and transferred, closed, and poured 24 boxes as an 8-hr. day's work.

These boxes had no bars and, thus, had to be of robust construction to resist the distortion likely to result from the pressure of the squeeze, and the rough handling at the knock-out. Thin-section light boxes, though easier to lift, were insufficiently durable. Corrosion, due to the hot, moist sand, quickly reduced the strength and rigidity of light boxes. Fig. 1 shows a layout with four rows of six boxes which reduced walking to a minimum. The lifting and laying of the half was fairly onerous, but the final slight lean-forward position when closing on the top-half was really heavy work. The carrying of these half-boxes was thus a drawback to the existing system. Although the facing sand was specially made in the large mill supplying the dry-sand moulding, the quality was never satisfactory. It was never free from coarse aggregates, and the resulting casting skin was very coarse by comparison with that obtained by foundries specializing in small green-sand work. All the small castings were cleaned by treatment in rumblers, and after grinding, stopping and painting, had a good appearance.

Temperature Problem

For pouring the moulds, ladles containing about 7 cwt. of molten metal had to be transported right across the foundry. These, necessarily, were handled very quickly in order to counteract the drop in temperature, which demanded careful control on account of the rapid melting of the big furnace; the mutual interference of cranes in the green-sand bay, and the danger of the metal freezing in the teapot spouts. All these factors tended to give cold metal, and required the making up and drying of a large number of ladles.

Table 1 details the drop in temperature from the first mould to the 14th. This was found to be considerable and so the optimum temperature could have been obtained, at best, for only a very few boxes. Metal had constantly to be discarded, but

* This paper was originally presented by Mr. Buchanan at a meeting of the Scottish branch of the Institute of British Foundrymen, held in the Royal College of Science and Technology, George Street, Glasgow. The Author, who has held the position of lecturer in foundry practice at the Glasgow and West of Scotland Royal Technical College since 1935, is connected with John Lang and Sons, Limited, Johnstone.

Limited Mechanization of a Foundry

it was too much to expect that a correct decision would invariably be made. The tendency of inspectors to ask for closer-grained iron in the thick sections made it more difficult to maintain soft, rapid-machining iron in small green-sand work.

The costing system, or at least the method of pricing castings to the machine shop, showed machine-moulded castings to be very cheap and profitable, therefore, very large quantities of patterns were moulded in the 20- by 12-in. boxes. These factors made the reorganization of the green-sand bay a priority matter. It was therefore decided to set up a convenient size of cupola to supply a suitable grade of metal and perhaps incorporate an automatic ladle addition later to vary the composition as desired.

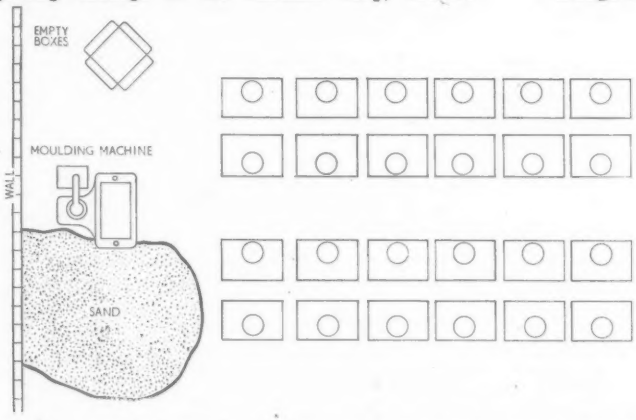


FIG. 1.—*Arrangement of the green-sand bay (with four rows of six moulding boxes), before mechanization.*

Visit to Henry Wallwork & Company, Limited

In 1956, the Author was privileged to visit the foundry of Henry Wallwork & Company, Limited, where Walbro' cupolas of quite small capacity were installed, casting being carried out continuously throughout the shift. It should be noted that in the Walbro' cupola (Fig. 2), in addition to the fact that the metal and the slag have an extremely short distance to travel to the ladle, the metal stream is surrounded by a strong carbon-monoxide jet or flame, which must at least completely counteract the radiation loss, and may conceivably impart a useful amount of heat to the ladle, while the slag forms an additional hot covering. The boxes move past the cupola on a suitable conveyor and the whole moulding, casting, knock-out and sand-preparation is carried out as a continuous process. The Author was much impressed by the fact that, after casting, the metal could be spilled out of the head if pushed round the bend in the conveyor track. This was a clear indication of the good casting conditions which he himself was so anxious to attain.

DESIGN AND ERECTION OF THE NEW BAY

The Wallwork plant casts about 900 boxes per 8-hr. shift, so their layout could not be justified in a foundry designed to cast about 100 boxes. The object sought at the Author's foundry was to attain similar results with less outlay on plant and to have the plant working throughout the year instead of say 1½ months at the 900 boxes per shift rate. The outlay eventually involved has actually been recovered in less than a year.

Design and Construction of the Furnace

Various forms were sketched out and considered, including, for instance, several forms of portable cupola, cupolas with detachable hearths to serve as a ladle, and oil burners, etc. (The mains-frequency induction furnace was not given much thought because it was deemed that the cost would be too high.) All of these types of cupola would be required to operate in the moulding bay, thereby creating some ventilation problems. For example, if the furnace shaft was taken up through the roof, the travel of the 10-ton overhead crane would be restricted in that area. It was also considered wise to bear in mind that some future change in the demand for castings might make this floor space of value for heavy work. The furnace should therefore be placed outside the building and leave the overhead crane free to cover the entire length of the bay.

Rate of Output Required

It is undesirable to have too large a furnace, because of the uneconomic use of coke throughout

TABLE 1.—*Metal Temperature Data obtained while casting Fourteen Moulds.*

Metal temperature at runner, 45-in. cupola, July 12, 1956.			Green-sand boxes cast from the same ladle.	
Time.	Temperature (as read).		Boxes.	Temperature.
	Deg. C.			Deg. C.
3.35	1,310		1	1,290
	1,310		2	1,280
	1,320		3	1,280
	1,330		4	1,275
	1,330		5	1,270
	1,340		6	1,255
	1,340		7	1,255
	1,340		8	1,240
	1,360		9	1,235
	1,360		10	1,235
	1,360	Average	11	1,235
	1,360	temperature	12	1,225
	1,380	1,370	13	1,220
	1,380	deg. C.	14	1,220
	1,380			
	1,380			
4.55	1,380			

Temperature drop from furnace to mould, 100 deg. C.
Temperature drop in casting, 5 deg. C. per box.

its life, the higher initial cost, and the difficulty of having available a sufficiency of boxes ready to cast. It is, however, equally desirable not to have the furnace too small, otherwise the rate of casting production is reduced and, below a certain size, patching becomes difficult. Furthermore the small metal stream, especially in continuous tapping, is severely affected by radiation heat-loss, and this leads to divers troubles. The diameter of the

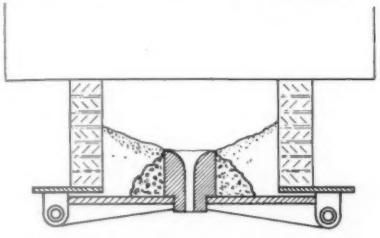


FIG. 2.—*Diagram illustrating the principle of the Walbro' cupola.*

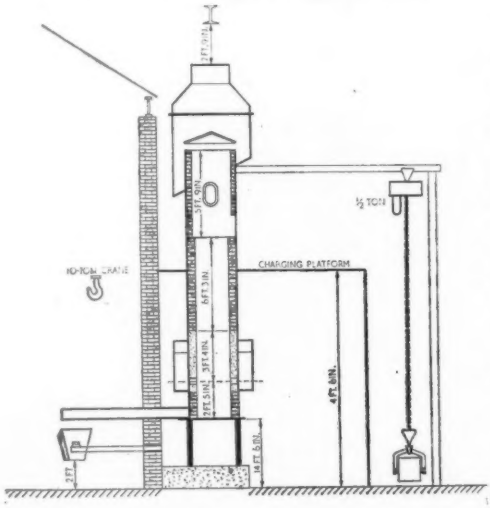
cupola (Fig. 3) was established at 27½-in., which is generally supposed to give a melting rate of 2½ tons per hr. A set of main tuyeres was installed in association with auxiliary ones, as in the balanced-blast system.

Water-cooling System

The vertical-pipe system of cooling the melting zone, as described in a previous Paper*, was used, but somewhat simplified (see Fig. 4). The windbelt shell was extended to form a circular trough to collect the overflow from the cooling pipes, and this water was available for recirculation.

* See "Cupola Practice: Second Thoughts," JOURNAL, September 16, 1954, p. 315.

FIG. 3.—*Section drawing showing the cupola dimensions which were finally decided upon.*



Slag Disposal

The overflow from the tank and dust catcher was directed beneath the runner at right angles to it, so that continuous slag-granulation would take place. It is essential to skim off the slag when ladle additions are incorporated, but the need to conserve heat was an important factor during the earlier runs, so it was decided initially to run both slag and metal into the tilting ladle, thus reducing the heat loss.

Tuyeres

Tuyere holes were cut in the shell at 90 deg. intervals and at these points the water pipes were bridged to form a water-cooled frame to give the desired tuyere opening. This assembly is made up of five standard T-connections (Fig. 5). The central inlet pipe was not connected to this grid, in order to simplify the construction. These were blanked off and had a partition down the centre to encourage the static water to circulate by convection. The small auxiliary tuyeres were formed by pipes so placed as to enter between the vertical cooling units. Ganister was, of course, rammed in to complete the lining and cover the pipes.

Spark Arrestor

A large number of spark arrestors are now in use; they incorporate the simple principle whereby the water is pumped up to the spray and returns by gravity.

Cupola and Installation

Obviously the entire plant, and especially its erection (Fig. 6), had to be completely planned before starting. Two long girders (10 by 5 ft.), were obtained from the machine-shop stock, and these were hauled up into a vertical position, secured horizontally to the heavy main-roof girder, and cast in foundations. The cross girder was then hauled up and bolted in position, thus forming, when fitted with a runner, a permanent overhead lifting gear which, with reasonable painting, should outlast the plant itself.

The cupola shell was supplied in two pieces, having the joint just below the charging door. This made it convenient for securing the floor plates of the platform. The openings for tuyeres; charging; air-heater; tapping; lighting and all fittings such as ducting; bottom doors; re-enforcement, and tuyeres covers were made as required. The girder forming the runner and carrying the charging skip was supported on its own framework, so as to reduce the necessity for very heavy roof members, and thus the covering of this could be a normal construction in corrugated iron.

The transporting of the cupola sections through the foundry was not practical, as it would have involved knocking a large hole in the wall and thus interfering with the daily production in the green-sand bay. It was decided to construct a simple bogie by welding a cross of channel irons, to which was fitted an axle carrying four cast-iron wheels. This reduced the chance of sinking in soft ground. Two curved blocks formed a cradle and a turn-

Limited Mechanization of a Foundry

buckle sling was used to secure the load—thus conforming to the best long-distance transport tradition. The load was set at a nice balance on the axle as is shown in Fig. 7, where a workman is holding it with one hand. The long angle-iron clamped to the bogie frame made steering very easy.

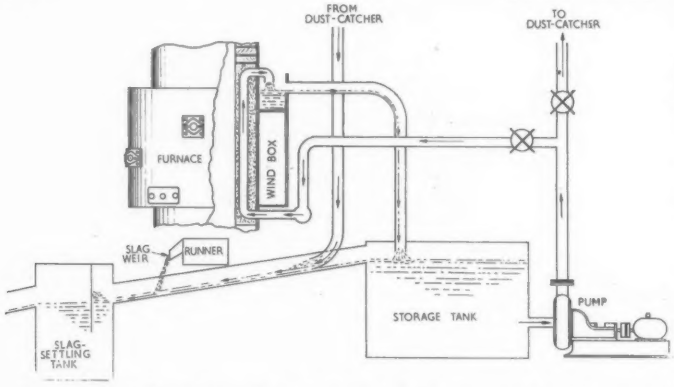


FIG. 4.—*Vertical-pipe system of cooling the melting zone of the furnace.*

The only outside approach to the cupola site was by a narrow passage between two corrugated sheds and the clearance was only a few inches. The sensitive steering allowed the bogie to pass the occasional rainwater pipe on the sides of the buildings without dismantling anything. This passage was too soft under foot, so a hard surface was made beforehand with bonded gravel.

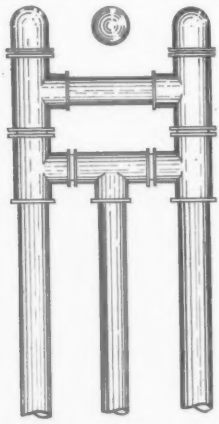


FIG. 5.—*Simple method of forming the tuyere opening, showing the five T-connections which were incorporated.*

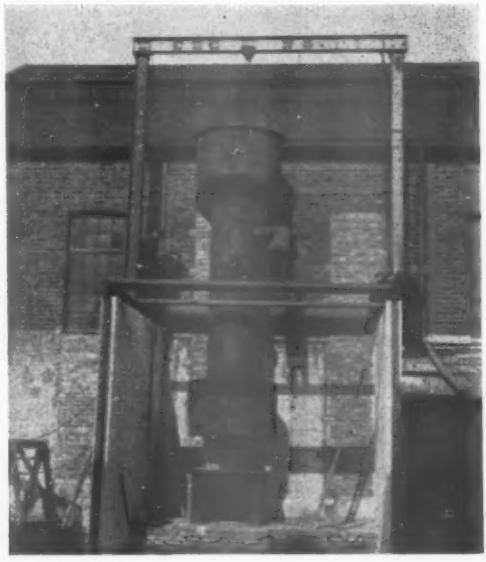
The space available was too restricted to allow the use of manpower, so a winch was set up at the cupola end of the passage and the load drawn steadily through by winding in the steel wire, at the same time using the long angle-iron "tree" to guide it carefully. It would have involved much toil had the load fallen off or the wheels become bogged down. However, the entire journey was completed in a very short time, actually in 45 min.

Charging Equipment and Method

A half-ton block, of the King type, was use for raising the materials to the charging platform, and it was considered safer to use a double-fall lift, to prevent accidents which might arise from too fast a lift or from possible overwinding. Thus, the charging cannot be conveniently carried out straight from the ground to the cupola door. A reasonable stock of materials is put on the platform in the earlier part of the day, then the tipping skip is used as a weighing device by loading it on the platform during charging time, pushing it forward and tipping its contents into the cupola.

The charge consists of pig-iron of constant composition, and returned scrap from this bay also, so that small variations in the ratio of these two constituents make virtually no difference in the final composition. The accurate weight of the charge is the most important thing. This is ensured by calibrating a suitable heavy-duty spring, so the centre pin is flush with the cross guide at the correct load and no graduated scale is necessary. Coke is measured by shovel and this appears to be quite satisfactory, whilst the limestone, which is of graded half-size, is measured in a sheet-iron con-

FIG. 6.—*Cupola during erection. The shell was supplied in two pieces having the joint just below the charging floor.*



tainer and spread evenly. Soda ash is added in tablet form, the number per charge being readily fixed, whilst the ferro-alloy additions are made as briquettes.

Working Conditions

The housing of the platform was made quite carefully with a view to excluding rain and draughts. Ample storage room was provided for the daily consumption of metal, coke, etc. Access to the platform was by a steel ladder through the floor in the left-hand corner and the ladder was fitted with a safety guard to about 7 ft. from the ground. It was, of course, necessary for the workmen to lean out and draw loads inwards on to the platform. Some kind of safety rail was obviously desirable and considerable thought was given to this. The final arrangement consisted of two gates, which can swing individually when required by releasing locking pins, but the charging bucket can pass through without opening the gates.

The blower working on the charging platform was so noisy that it constituted a nuisance. Although the workmen did not complain, it was thought advisable to reduce the noise and a duct was taken from the fan inlet to the outside air. Whilst this proved to be very effective, the air on the charging platform became noticeably stagnant and the lack of ventilation was troublesome. Experimental holes were cut in the sides of the building, but these had little effect, indeed, it sometimes appeared that more gas came in this way than fresh air. The air heater appeared at times to contribute to the slight escape of furnace gases by deflecting them through the charging door, so this opening was lowered by the available 6-in. or so, and fitted with a steel shutter.

On windy days, this arrangement was not satisfactory because the cupola chimney did not heat at all and "natural draught" no longer existed. The fan duct was altered to bring the inlet as close as possible to the source of the gas, namely the top of the charging door. This was, to some extent, successful in producing some circulation of fresh air and perhaps returning a small amount of heat to the air supply to the cupola. However, on the windy days the atmosphere on the platform was quite unsatisfactory. The workmen did not complain much, but it was very obvious that the conditions could not be tolerated.

FIG. 7.—*Cupola section balanced on a specially-made bogie, which had four cast-iron wheels.*

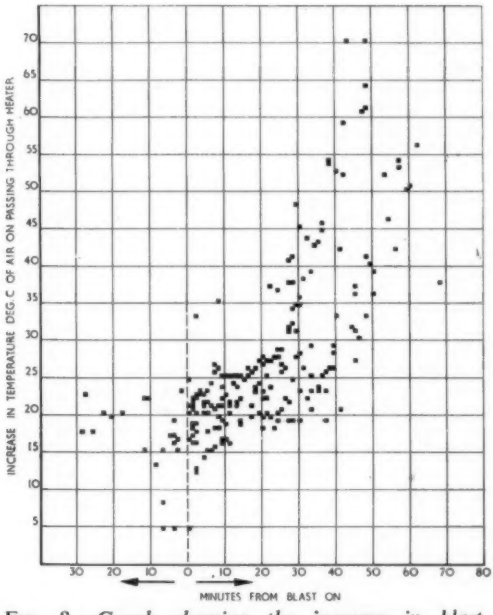


FIG. 8.—*Graph showing the increase in blast temperature during the blow.*

FIG. 9.—*Large ladle adapted as a receiver for molten metal.*

Limited Mechanization of a Foundry

Air Heating

The success of warm air applied to two previously-constructed cupolas in the foundry led to its adoption in this instance also. As described elsewhere, this improved the working of the furnace quite appreciably and required no attention after installation. There are no "before" and "after" comparative data, because the cupola was built with air heating. As shown in Fig. 8, the blast temperature at the wind belt is about 20 deg. C. above atmospheric temperature at blast on. During the short blow, the air temperature rises considerably.

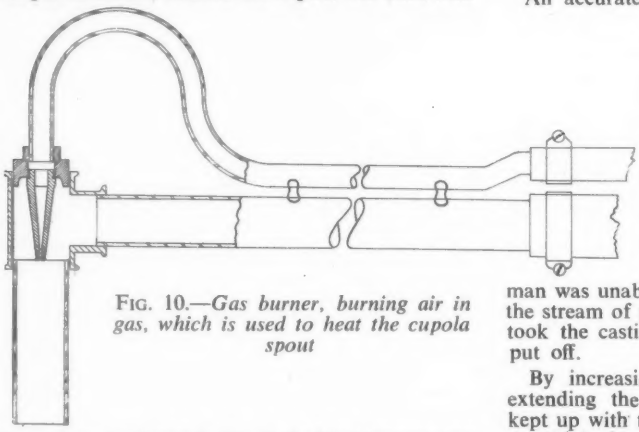


FIG. 10.—*Gas burner, burning air in gas, which is used to heat the cupola spout*

sion of the spark arrestor. The gases were, of course, passed through the water spray before reaching the fan. This equipment worked extremely well. The smoke from the wood fire in the bed can, on a calm day, be seen rising about 40 ft. The degree of success of this effort has reacted very favourably on the workmen's frame of mind.

Receiver Ladle

An accurate forecast of the size of ladle most suitable was rather difficult, because so much depended on the speed of crane handling, the weight of metal in each box and the confidence of the ladleman, whilst the ease with which he could control the stream of metal was also a factor. At first, the ladle seemed too small and as a simple lever was adopted as being faster than any form of gearing, balance became important. Some time was lost, owing to the fact that the craneman was unable, because of the lifting gear, to see the stream of metal. The furnace frequently overtook the casting operation and the fan had to be put off.

By increasing the size of ladle (Fig. 9), and extending the spout, the speed of casting easily kept up with the cupola, *i.e.*, in the length of blow to which the men were accustomed. The present practice is to close the tap-hole and collect metal for about 15 min. before running continuously. The slag is allowed to run into the ladle to form a covering

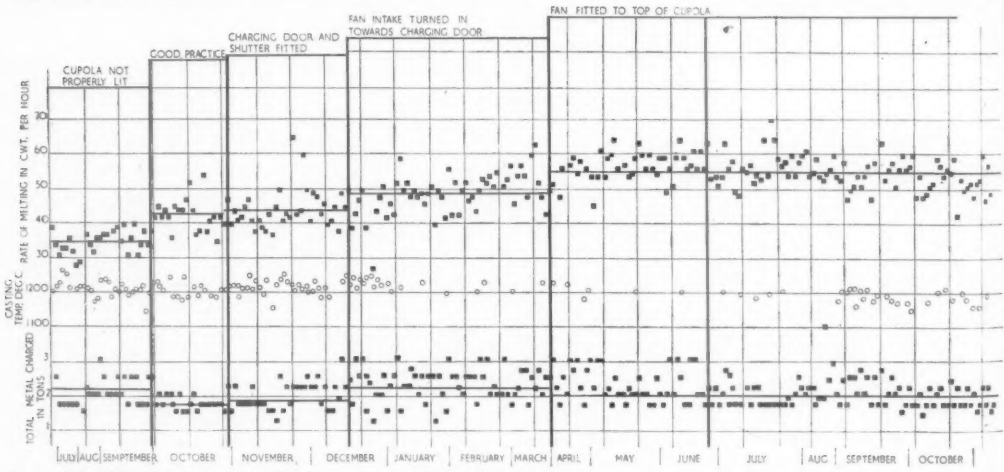

CUPOLA NOT PROPERLY LIT
GOOD PRACTICE
CHARGING DOOR AND SHUTTER FITTED
FAN INTAKE TURNED IN TOWARDS CHARGING DOOR
FAN FITTED TO TOP OF CUPOLA
RATE OF MELTING IN CWT. PER HOUR
CASTING TEMP. DEG C.
TOTAL METAL CHARGED IN TONS
JULY AUG SEMPTEMBER OCTOBER NOVEMBER DECEMBER JANUARY FEBRUARY MARCH APRIL MAY JUNE JULY AUG SEPTEMBER OCTOBER

FIG. 11.—*Melting-rate graph showing a progressive improvement in cupola performance as various innovations and improvements were made.*

Gas Fumes on the Platform

The usual way of eliminating gas fumes on the platform is extension of the cupola shell to form a high chimney, but this is not always possible. In this case, a fan was built directly on to an exten-

and is then covered with exfoliated vermiculite. This is an extremely light and efficient insulator and, being light in colour and in large flakes, does not blacken the wall and roof.

The position of the trunnions had to be found

by trial as it is certain that there is no way of calculating this. The half bearings in which the trunnions rest were made about ¼-in. bigger in radius. This was done so that there was no inertia to be overcome in the first few degrees of tilt, and so that contact of the trunnion and bearing surface introduces some friction which is useful in preventing the ladle from moving further under its own momentum. The ladle is, while casting, always slightly heavy to the back which is, of course, safer.

Ladle Heating

In the earlier runs, the condition of the metal was not very good. Although the biggest single factor in improving the cupola performance was the replacement of the furnaceman, many other factors were important. One of these was the lack of good pre-heating of the ladle. At first, stick fires were used, but these filled the foundry with pungent smoke and achieved very little in the way of drying. A coke fire blown by compressed air was little better because it was usually too hot for too long, in consequence ruining the lining and actually distorting the ladle. Most of the coke was wasted. Paraffin blow-lamps were also unsuccessful.

Gas Burner

A gas burner was designed (Fig. 10), which reverses the principle of the Bunsen and burns air in gas. The air jet is a standard burner tip No. 10, as used in oxy-acetylene equipment, and has an opening of about $\frac{1}{16}$ in. This is economical in compressed air and permits a great degree of control ranging from a soft yellow flame to the strong blue "brush" flame, so suitable in glass blowing and similar operations. With this equipment the teapot spout of the ladle can be heated slowly or rapidly as desired.

With so many other factors contributing to its successful working this ladle does not need renewing more often than once in six weeks and the problem of sculls has completely disappeared. After casting, the ladle is tilted backwards and the slag run off clear of the spout; thus, since no slag gets into the spout, no trouble arises in the next heat.

Rate of Melting

The melting rate of a cupola is, of course, always calculated as the average amount per hour in tons from blast-on to blast-off. As actual melting starts slowly some time after blast is put on, it takes some time to attain full speed and as the overall time is reduced, the rate figure is adversely affected by the heating-up stage. The usual melting time for this cupola is less than an hour (Fig. 11), so the performance is much better than shown by the melting-rate figures.

The points on the graph are scattered, but with some 280 points on the graph, distinct trends are shown. There was an improvement due to the addition of the suction fan on the top of the cupola, and with the improvement in the melting rate, all metal troubles correspondingly decreased. Due to the higher metal temperature and better fluidity, there was a drop in heat losses arising between the stream of metal entering and leaving the ladle, and the improved condition of the metal became so noticeable that the moulding equipment came in for more attention. Large numbers of boxes were replaced and the patternplates and alignment of the moulding machines were more frequently checked.

(*To be continued*)

Amended Kitchen & Wade Offer

Replying to the amended offer by the Asquith Machine Tool Corporation, Limited, for the company's £495,000 share capital, Mr. A. Kitchen, chairman of Kitchen & Wade, Limited, manufacturers of drilling, boring, and honing machines, of Halifax, announces that the board unanimously considers that the proposals should be rejected. Explaining the decision, he says that he has every reason to feel confident that the company will continue to retain an eminent position in the machine-tool industry, despite Mr. Asquith's forebodings about the repercussions on the industry of a European Free Trade Area.

Mr. Kitchen points out the undesirability of Asquith Machine Tool Corporation taking control of a "thriving competitor." In his estimation about 80 per cent. of the company's products are directly competitive with those of the other company.

New Plessey Company

An agreement for the interchange of technical information enabling the company to manufacture cast permanent magnets of high energy has been concluded by the Plessey Company, Limited, Ilford (Essex), with the Arnold Engineering Company, Illinois, USA.

Preformations, Limited, the new company set up by Plessey for the development and production of permanent magnets, will undertake the manufacture of the magnets, which will be marketed under the registered trade mark of "Magloy."

Hawker Siddeley's Industrial Activities

Sir Roy Dobson, managing director of the Hawker Siddeley Group, Limited, announced last week that all the industrial activities of the group have been collected into one industrial company, to be called Hawker Siddeley Industries. Only recently the group stated it was co-ordinating all its aviation activities in one company—Hawker Siddeley Aviation.

The new industrial company will be under the chairmanship of Sir Roy, with Sir George Briggs and Mr. Arthur Frampton as joint managing directors. There are two deputy chairmen, Mr. H. T. Chapman and Mr. H. G. Herrington, and the board includes Mr. J. F. Robertson, finance; Mr. C. F. Barnard and Mr. M. C. Clear, export sales; Mr. D. K. Fraser, Dr. B. L. Goodlet, Mr. W. S. Warner, and Mr. P. C. Sharp, secretary.

Amalgamation of Engineering Firms

Two of Stafford's oldest engineering companies are merged by the acquisition of W. G. Bagnall, Limited, locomotive builders and railway engineers, by W. H. Dorman & Company, Limited, diesel-engine manufacturers, etc. The whole of the share capital and undertaking has been taken over from the Heenan Group, Limited, Worcester.

The union of the two firms, which became effective on January 28, brings their collective experience to over 150 years. W. H. Dorman was founded in 1870 and W. G. Bagnall five years later.

European Investment Casters Conference, 1959

The sixth conference of European Investment Casters is to be held from May 31 to June 3, in the *Haus der Technik* in Essen (Hollestrasse 1), of the North Rhine-Westphalia Province, Germany.

Provisional Programme

The provisional programme for the meeting is as follows:—

May 31. 8 to 9 p.m.: Reception in honour of delegates at the Handelshof Hotel, Essen.

June 1, 9 a.m. to noon: Official opening of the conference in the *Haus der Technik* followed by technical lectures. Delegates will lunch together, at 12.30 p.m., in the "Saalbau" restaurant and the afternoon (to 4 p.m.) will be devoted to further lectures. 4.30 p.m.: Departure by coach for a visit to the "Villa Hügel," near Essen, with tea during the trip.

June 2, 9 a.m. to noon: Lectures, followed at 12.30 p.m. by luncheon at the Handelshof hotel. In the afternoon from 2 to 5 p.m. there will be more lectures and a Castings Competition. 8 p.m.: Banquet at the Schloss hotel Hugenpoet, at Kettwig.

June 3, 9 a.m. to 11.30 a.m.: Final discussions of the Conference. 11.30 a.m. Historical lecture on the development of casting techniques. 12.30 p.m. Joint lunch with delegates' ladies, at the "Kaiserhof" hotel. 2.30 p.m. Departure for a visit to the Krupp research department.

Ladies Programme

June 1, 9 a.m.: Opening ceremony in the *Haus der Technik* followed by a visit to Essen Minster, and it's treasury; there will be a recital on the organ by the music director, a tour of the town, and a trip through the Gruga Park. 12.30 to 2 p.m. Luncheon in the "Schwarze Lene" restaurant followed at 2.30 p.m. by a visit to "Villa Hügel." Return 4.30 p.m.

June 2, 10 a.m.: Assemble at the Folkwangmuseum for a guided tour. 12 noon: Departure by coach to Düsseldorf for lunch at the "Rheinterrasse" restaurant, after which the coach will take passengers to the Schadowplatz for a sight-seeing tour of Düsseldorf. 4 p.m.: Return to Essen. 8 p.m.: Banquet in the Schlosshotel Hugenpoet, at Kettwig.

June 3, 11.30 a.m.: Ladies join their menfolk for the historical lecture on the development of casting techniques and at 12.30 p.m. for luncheon at the "Kaiserhof" hotel. 2.30 p.m.: Departure on a visit to the experimental coal mine of the GHH. (Gentlemen may also participate in this visit).

General

Mr. H. J. Meerkamp van Embden, of Holland, will preside at the conference which is being organized for the European Investment Casters by Mr. Schönböck and Dr. Krekeler of Gebr. Böhler & Company, Hansa-Allee 321, Düsseldorf-Oberkassel, Germany, from which firm application forms to participate can be obtained. Enquiries should be sent to Mrs. Heyrowsky at the address quoted. Completed forms should be returned by February 20.

The return of the completed forms will be considered to be evidence of registration for participation in the congress. The provisional programme is only intended to give a general idea of the proceedings and a detailed programme, covering the technical papers discussions, etc., will shortly be available from the president, Mr. Meerkamp van Embden. A printed card should also be completed by intending delegates for the purpose of reserving accommodation.

Conference fees are DM 120 (about £10 5s.) per person; this includes the cost of meals taken with the party, banquet expenses and all fees in connection with the general programme. Throughout the conference an information office will be open in the *Haus der Technik*, at Essen.

UK Export of Scrap*

Open General Licence Period Extended

At the request of the Ministry of Power the Board of Trade announce that arrangements have been made permitting the continued export of most kinds of iron and steel scrap until March 7, 1959. An open general licence is to be issued permitting the export, to any destination during the period February 5, to March 7 (inclusive), of iron and steel scrap not exceeding an f.o.b. value of £25 per ton. The licence specifically excludes material derived from armour plate or from military equipment, described in group 17 of the Export Control Order, and firms wishing to export such scrap should make application for individual licences giving particulars as to origin, location and exact present state of the material, and the name and address of the consignee or ultimate purchaser. Enquiries about this licence should be made to the Board of Trade, Export Licensing Branch, Gavrelle House, Bunhill Row, London, E.C.1. Copies of the open general licence will be obtainable from H.M. Stationery Office, Kingsway, London, W.C.2, and branches; price 2d. each.

* Readers may remember that an article on this subject printed in the JOURNAL of December 11, 1958, referred to a Board of Trade statement that the period would not be extended after February 4, despite the view expressed earlier by the Paymaster General that the matter would come up for review early this year—Editor.

Swedish Foundry Abstracts

The December issue of *Gjuteriet* (the Swedish foundry magazine) carries two important articles on grey cast iron. The first is a report on the properties of the metal, and in it comprehensive information is given on the characteristics of five qualities of grey iron which have been standardized in Sweden. The published data are to be included in the standard specification.

The second report, which has been submitted by *Mekanforbundet* (Swedish Employers Federation), and *Metalnormcentraten* (Swedish Metal Standards Association), is a draft specification for the "Transverse Testing of Grey Cast Iron." In it is outlined the method of casting the test-bar, 30 mm. (1.2 in.) dia., and 500 mm. (20 in.) long. The distance between centres for the transverse test is 450 mm. (18 in.). This is similar to the standard British test-bar. The test is not intended to replace tensile testing for acceptance purposes.

Further Drop in Raw Materials Prices

Lower prices for a number of commodities, including copper and rubber, brought a sharp drop in the December index of basic material prices. At 92.6 the index was 6 per cent. below the figure for December, 1957, and only 0.1 above the low point reached last September.

In spite of these price reductions in raw materials, the wholesale price index for all manufactured products was unchanged in December. A fall in the wholesale price of tinplate, some chemicals, and plastics was offset by the higher prices of steel sheets and the higher costs of fuel used in manufacturing industry.

Warnings to Foundrymen—Employers and Employed!

Extracts from and Comment upon the Foundry Unions' Report

An informative and most-illuminating article, entitled "Industrial Injuries and Legal Defence," appearing in the January *Journal* of the Amalgamated Union of Foundry Workers, deals in the preamble with the adoption of new safety tools and equipment generally in relation to pneumoconiosis claims, and concludes with a list of particular settlements of claims for damages arising from this and other causes during last November. (Excluding road accidents, a total of 91 claims, involving £17,356, is listed.) The following is a précis of some of the points put forward in the article:—

With the development of new equipment for controlling dust in foundries, the term "all practical measures"—to quote from the wording of the Foundry Regulations—must now include the provision of dust-extraction hoods on swing-frame grinders, stand or pedestal grinders, and portable dressing tools, to control the dangerous dust at its source and prevent it from spreading into the foundry atmosphere. A wide range of safety tools is now available for this purpose, at a cost that even the owners of small foundries can afford. These tools are regularly advertised in the FOUNDRY TRADE JOURNAL and other trade papers, yet very few employers have, so far, introduced them into their foundries, despite the Factory Regulations and the pressure of claims upon them. If some employers ignore their responsibilities that is no excuse for foundrymen to do the same. Their job is to make sure that working conditions are as safe and healthy as they can be made—it is the men who use the tools who are in danger. Some objections have been made to the use of dust-extraction hoods on portable tools. It is argued that they are cumbersome and slow the work down, causing loss of earnings. If this be so, the answer is not to throw them aside as useless, but to seek some adjustment with employers which will offset any loss of earnings and allow time for the new practice to be established.

Changing Habits

Changing old habits is never easy, but a way has to be found to make the new tools work effectively. Every exchange of views towards this aim should be encouraged. In this way, not only can pneumoconiosis be prevented, but equally distressing chest disorders (like bronchitis), which are often due to dust. It has also to be kept in mind that failure to use the tools provided can prejudice future claims for compensation. Where the new tools are provided, they should be used.

November Claims

The list of settlements of November claims reported at the conclusion of the article (such settlements make a monthly feature in the AUFW *Journal*) contains the following.*

£300. Dresser fractured wrist on badly-worn duckboard.
£50. Labourer burnt foot during "run-out."
£60. Labourer's hand burnt by blow-back from paraffin lamp.
£50. Moulder injured back by tripping over obstacle on floor.
£15. Labourer lacerated arm and leg.
£185. Labourer's finger injured when piece of metal fell from skip.
£310. Labour sustained hernia as a result of fall.
£20. Moulder burnt when mould exploded.
£3,500. Dresser with pneumoconiosis.
£50. Die-caster burnt by splash of metal from crucible.
£125. Apprentice coremaker's foot fractured when moulding box fell from slings whilst being turned over.
£250. Moulder's foot injured when heavy moulding box was lowered by crane without instruction.
£15. Moulder's head struck by moulding box falling from crane.
£10. Moulder's hand crushed when trapped by core which slipped.
£75. Moulder's back injured while attempting to separate box which stuck, due to defective pins.
£110. Labourer's foot splashed with molten metal from ladle which tilted suddenly.
£75. Moulder's foot burnt in "run-out."
£500. Moulder struck by heavy board knocked down by crane.
£75. Dresser's eye injured by hot ash and steam when cleaning out fire in drying stove.
£70. Sandblaster's back injured when avoiding crane (he stepped on to floor plates which gave way).
£15. Labourer injured leg by falling through hole in floor.
£75. Moulder trapped finger between handle of barrow and wall.
£40. Machine moulder injured thumb when handling box-parts.
£5. Labourer burnt in fall against hot castings.
£650. Dresser injured fingers which came into contact with grindstone.
£35. Labourer's foot injured when casting he was carrying fell as he slipped on shot on floor.
£85. Coremaker injured by moulding flasks knocked from stack by lorry.
£20. Fettler's foot injured by falling crankshaft.
£20. Labourer injured foot when struck by falling tractor-block.
£25. Furnace-operator's face and eyes injured by blast of hot gas from furnace when a clamp came off the door.
£25. Coremaker crushed finger when fellow workman slipped whilst both were lifting heavy core.
£10. Fettler's leg injured between skip and trolley.
£20. Castings inspector received abrasions when casting slipped from hook whilst being examined.
£375. Labourer sustained hernia through treading on loose box-clamp.
£25. Machine moulder's foot burnt when metal blew out of mould, due to mould being damp.
£600. Moulder with pneumoconiosis.
£50. Dresser's foot injured by grinding wheel which broke during cutting operations.
£45. Furnaceman injured as a result of furnace explosion.
£120. Moulder's foot injured by moulding-box part falling whilst being turned over.
£225. Moulder sustained multiple burns, due to molten metal splashing off wet plates.
£175. Moulder's arm fractured in explosion caused by gas escaping from neighbouring cinder-bed being ignited by spark from furnace.
£400. Workman with pneumoconiosis.
£75. Labourer's eye burnt by molten-metal splash from furnace.
£35. Crane driver's ankle sprained in fall.
£30. Labourer injured by tank lid whilst cleaning the tank.
£100. Moulder injured back whilst turning over heavy grating.
£50. Labourer's head injured by moulding box dislodged from stack by crane.
£175. Sandblaster's foot injured by steel bar falling from insecure stack.
£200. Moulder's foot struck by falling bolster bar.
£70. Moulder's foot burnt during "run out."
£600. Labourer's foot injured when casting fell from insecure stack.
£50. Labourer injured leg when falling over boxes whilst operating hand crane.
£10. Moulder's foot splashed when catching metal at furnace.
£125. Dresser's toe fractured by falling casting.
£100. Moulder's ribs fractured in fall over lifters.
£60. Labourer's thumb trapped in wagon door closed without warning.
£100. Labourer's fingers injured when bricks, used to hold stove-door in position, fell.
£200. Coremaker injured foot when coreplates fell as a result of being insecurely stacked on uneven floor.
£100. Labourer's leg injured.

* For obvious reasons, names and places have been omitted.

FIG. 1.—*Part of the Metropolitan-Vickers Electrical Company's fettling shop, showing (in the left foreground) a wire hand-brush fitted with a cowl; the flexible dust-exhaust tube is clearly indicated. Beyond, working on different castings, are three radial grinders fitted with local dust-extraction heads.*

£175. Moulder burnt by splash of metal from ladle.
£375. Moulder received multiple burns when bottom fell out of ladle.
£675. Sandblaster's eye injured when piece of shot entered helmet.
£150. Labourer injured back when landing of emergency stairway collapsed.
£500. Labourer injured back when steel bar slipped whilst levering carriage into corestove.
£33. Moulder lacerated fingers.
£125. Labourer's hand trapped between two castings.
£650. Labour injured head and back when hook slipped off stove door.
£60. Machine-moulder's head struck by chain.
£35. Coremaker burnt when inflammable spirit in core-wash caught fire.
£30. Labourer's foot struck by falling bar.
£475. Labourer lost part of finger.
£25. Moulder's back injured due to explosion.
£250. Dresser with pneumoconiosis.
£125. Moulder injured back when stack of moulding boxes collapsed.
£75. Storekeeper's foot injured when treading on piece of tubular steel and, again, by falling crate.
£300. Dresser sustained hernia through slipping in hole in concrete floor.
£75. Labourer's foot injured when struck by large piece of concrete.
£39. Moulder's foot burnt by molten-metal splash when ladle caught an obstruction.
£50. Labourer's foot injured when truck got stuck in bad floor.
£140. Truck-driver's wrist injured by windlass handle out of control.
£750. Crane-driver fell into unfenced hole at bottom of crane ladder.
£10. Labourer injured ribs when falling.
£60. Moulder's finger crushed when crane driver lowered load too fast and dislodged girder.
£10. Moulder injured foot when stepping on sharp piece of metal in gangway.
£250. Dresser's leg injured in fall over gangway obstruction.
£100. Machine moulder fractured wrist in stumbling over coke fork.
£60. Moulder's foot injured by box-part falling from bench.
£35. Moulder burnt by splash of metal.
£650. Labourer's finger crushed when crane driver failed to stop lowering when signalled to do so.

Inescapable Responsibility

On perusal of these causes of accidents, it is easy to generalize and say all were due to someone else's carelessness, negligence or to unusual combinations of circumstances. Yet, collectively the industry has to foot the bill and accept responsibility. Thus it is incumbent on everyone working in a foundry to safeguard his colleagues to the best of his ability. It is hoped that the list reproduced here will shock all concerned into making a resolve that no fellow-worker in the future shall be injured as a result of personal negligence. A moral—and legal—responsibility is laid on those in authority to exhort, instruct and guide subordinates in safe working practices, and to set a high standard in "built-in" operational safety for tools and equipment, using all the devices of modern science.

MR. D. MILLER, until lately associated with St. Albans Die Casters, Limited, is flying to India to-day (Thursday) to take up an appointment as technical superintendent (foundry) with the Aluminium Manufacturing Company (Private), Limited, at Dum Dum, near Calcutta.

Owing to the continued expansion of the Foundry Services Group, Mr. E. WEISS has relinquished his position of managing director of Foundry Services, Limited, to give more time to directing the parent company, Foundry Services International, Limited. He is succeeded by Dr. D. V. ATTERTON.

Electricity Charges reduced without Tears

By W. Barlow, A.M.I.E.E.

Electricity is nowadays one of the basic commodities of the foundry industry, and as such it is essential that it be used efficiently. The Electricity Boards are careful to frame their tariffs to the consumer in such a manner that it is the consumer who suffers most if electricity is used inefficiently. For example, the East Midlands Electricity Board have an Industrial Tariff which contains a charge of 12s. 6d. per kva of maximum demand per month, and it is this charge which penalizes any electrical inefficiency, *i.e.*, having a low power-factor. If the efficiency or power-factor is below 100 per cent. then not all the demand paid for on the above-mentioned charge is being used to do useful work.

Where does the Loss occur?

The loss in efficiency occurs in those items of electrical apparatus which contain many coils of wire forming, in effect, electric magnets. The following types of apparatus depend upon electro-magnetic winding for their operation, but in no case does the current doing the magnetizing pass through the apparatus and become mechanical power, it merely circulates around the windings:—(*a*) Almost all types of AC motors; (*b*) transformers; (*c*) welders, and (*d*) fluorescent lighting choke coils.

Other types of apparatus, however, do not depend upon an electro-magnetic winding for their operation, for example:—(*a*) Electric fires; (*b*) ordinary tungsten-filament light bulbs, and (*c*) most types of heaters. There is therefore no loss of efficiency in these, so far as the electricity tariff is concerned.

What is the Remedy?

The remedy is *not*, however, to remove the electro-magnetic windings, since without these the various items of apparatus would not function at all! The way to do it is to fit electrical condensers (or capacitors), so that these devices actually provide the current for the electro-magnetic windings of the motors, etc. This will mean that the loss does not then have to be measured on the Electricity Board meter, as the consumer is, in effect, *generating his own loss* from within. Table 1 shows the monthly meter readings in kva in an actual factory, with and without the condensers or capacitors.

TABLE 1.—*Factory Meter Readings, With, and Without, Capacitors.*

Month.	Without capacitors.		With capacitors.		Saving in kva.
	kva.	P/factor.	kva.	P/factor.	
April	62	0.63	40.5	0.965	21.5
May	62	0.63	40.5	0.965	21.5
June	62	0.60	39.0	0.955	23.0
July	67	0.61	44.0	0.935	23.0
August	63	0.62	40.5	0.965	22.5
September ..	67	0.58	42.5	0.915	24.5
October	66	0.65	44.5	0.965	21.5
November ..	65.5	0.69	46.0	0.980	19.5
December ..	71	0.66	49.5	0.950	21.5
January	61	0.67	41.5	0.985	19.5
February ..	65	0.675	45.0	0.975	20.0
March	66	0.67	45.5	0.970	20.5

Total annual saving 258.5 kva at 12s. 6d. per kva = approximately £160. Cost of Capacitor, switch, and installation = £200.

The capacitors require no maintenance and can be fitted and forgotten for up to 20 years or more. Increases in load can be catered for in the future by additional capacitors. There is no doubt that this is one saving which is *not* too good to be true, and it might well be achieved in many factories, large or small.

Other Benefits

Other benefits may be had from the installation of capacitors, apart from the monetary saving, for example:—

(1) By improving the efficiency (power-factor) the current is reduced. Therefore, when cable, transformers and switches are already operating near their maximum load, the improvement means that additional load can be added without installing extra cable and transformers, etc., items which are very expensive;

(2) the heating in the cables and transformers, etc., is reduced, and such equipment will therefore have a longer life;

(3) the voltage is maintained at a slightly higher value, and some machines actually start up more easily because of this.

No attempt has been made in this short article to go into the technical details of the subject of power-factor correction, as it would tend to confuse the issue. Only the basic details have been given, in as simple a manner as possible. Power-factor-correction specialists are always pleased to carry out surveys of factories and submit recommendations to suit individual requirements.

Mr. H. E. HARD, secretary and comptroller of the International Harvester Company of Great Britain, Limited, since April, 1955, has returned to the US to take up new duties with the motor-truck division of the parent company. Continuing and rapid expansion has now made it necessary to divide the duties formerly undertaken by Mr. Hard between two separate functions. That of comptroller will be taken by Mr. GEORGE F. P. BRADBROOKE and that of secretary by Mr. A. J. E. CUSHION.

At the annual meeting of the Derby and District Association of the Engineering and Allied Employers' Federation, Mr. C. PERCY JONES, director and general manager of Rolls-Royce, Limited, aero-engine division, Derby group, was elected president. Mr. P. BURLEIGH, director of International Combustion, Limited, Derby, was elected senior vice-president, and Mr. K. J. WILKINSON, deputy managing director of Spiral Tube and Components Company, Limited, Derby, junior vice-president.

American Letter

Aluminium in the Car Engine

It now appears almost certain that Chrysler Corporation will be one of the first car manufacturers in America to market a die-cast aluminium engine. Dies for a V6 block are under construction, and a machine capable of handling such dies is being built. The machine will be installed at Chrysler's plant at Kokomo, Indiana, where aluminium die-castings for automatic transmissions are at present produced.

Shell-moulded Components. Production of finned, grey-iron cylinders for use in a horizontally-opposed six-cylinder engine is behind schedule at Chevrolet-Tonawanda foundry. These are to be shell-moulded components, and will be used in engines with aluminium cylinder-heads, crankcases, and manifolds, which parts are presumably to come from Chevrolet's plant at Massena, N.Y. It is rumoured that cores for some of these parts will be of the shell type. This seems to be borne out by the fact that a pneumatic sand-conveying system is being installed, to move dry sand from hopper-bottom cars to two 80-ton silos in the foundry building.

Anti-freeze Corrosion Problem. The possible use of more light metals in automotive engines and cooling systems will pose new anti-freeze corrosion problems, according to Leonard C. Rowe, General Motors research laboratories' chemistry department. Anti-freezes, rust inhibitors, and water with various types of impurities, which are used in present-day engine-cooling systems may not be satisfactory in aluminium engines or radiators. Pitting and galvanic corrosion are likely to occur, and Mr. Rowe suggests that chemical manufacturers search for new coolant, anti-freeze, and inhibitor materials, or find alternative methods of cooling. For example, in the future, aluminium cylinder-heads and -blocks may well be designed to incorporate air-cooling systems.

Fuel Tests. Some changes may also be required in fuels for aluminium engines. Dupont's petroleum laboratory is conducting tests on petrol-blending stocks, tetra-ethyl-lead, and petroleum additives, and on combustion and surface-ignition characteristics of aluminium engines. Similar tests are being conducted on a grey-iron engine to provide comparative data, which are expected to assist in the development of new products to meet lightweight engine requirements.

GIFS One-day Courses

The Gray Iron Founders' Society have organized a series of one-day courses for designers and engineers*. These courses will deal with the following aspects of designing and processing grey-iron castings:—(1) Design possibilities exclusive to grey and ductile iron; (2) ultimate economies to be realized by utilizing the inherent advantages (properties) of grey iron when designing; (3) new services being offered by up-to-date foundrymen; and (4) recently developed short-cuts in designing castings. Numerous examples of how other practical engineers have solved typical problems by the ingenious use of grey-iron castings will be given.

Forthcoming Conference

The theme of the Texas Regional Foundry Conference will be "Modern Technology adapted to Southwestern Foundry Operations." The conference will be held from March 19 to 20 at the Menger Hotel, San Antonio, Texas, and will be sponsored by the Texas Chapter of the American Foundrymen's Society. Two general sessions, four steel sessions, four grey-iron sessions and four non-ferrous sessions will be included in the programme.

*American industrial concerns have recently been accused of slackness in sales promotion (a rather *un-American* activity, one would have thought). This course provides an effective answer to such criticism.

House Organs

Monsanto Mail, No. 2. Published by Monsanto Chemicals, Limited, 10 to 18, Victoria Street, London, S.W.1.

The opening article in this magazine carries the apt title of "Bronze-age Brainwave" and covers investment casting—a modern application of the lost-wax process. The main article, however, is "Wealth, Waste and Water" which reminds the reviewer that he once suggested to a foreign foundry organization that they should bring pressure on authorities to insist that every Council house should be provided with a bath. The reply he received was that there was insufficient water in the land to support such a scheme. As is pointed out in the article in this magazine, unless further provision is made on a national basis, the same condition may come about in this country.

Albion Works Bulletin, Vol. 12, No. 2. Issued by John Harper & Company, Limited, Albion Works, Willenhall.

This is one of the most interesting house organs regularly received in the JOURNAL offices. As is customary, it opens with the proceedings of the Joint Production Committee, where the usual type of "grouses" are ventilated and overcome. The guest on this occasion was the Bishop of Stafford who heard that full-time was being worked in all departments. It was reported during the committee meeting that a casting the firm had supplied in s.-g. iron had given a tensile strength of 82 tons per sq. in. There is a note on the appointment of Mr. D. H. Lewis, O.B.E., T.D., as a Deputy Lieutenant of the County of Stafford. The notes included about exports are alike interesting and encouraging and reports favourable to the firm's sales are printed from Belgium and Germany. The issue concludes with a list of those employees who have completed 40 years' service with the company, and a number of sporting activities.

Victor Magazine, Vol. 5, No. 7. Issued by Victor Products (Wallsend), Limited, Wallsend-on-Tyne.

There can be no grumbles by the employees in this concern that they are kept in the dark as to the changes in policy of the company, for Mr. R. W. Mann, the managing director, has gone to great lengths in the firm's magazine to explain the steps to be taken to meet increased competition. Another activity of the company, which is to be commended, is the worthwhile payments made for suggestions—one employee received £90 11s. 6d. for three suggestions. The odd pennies shown would seem to indicate some system based on savings, if this is so, it appeals to the reviewer as being better than an arbitrary amount. The magazine is well edited and carries a number of interesting articles, but why one of these should carry publicity for a detergent is not clear.

FOREMEN OF BAMFORDS, LIMITED, agricultural engineers of Uttoxeter, held their ninth annual dinner at the White Hart Hotel, Uttoxeter. Directors and executives of the firm were present, as well as retired foremen.

Equipment & Supplies

New-shape Aluminium Ingot

Aluminium Union, Limited, The Adelphi, John Adam Street, London, W.C.2, the distributors of "Alcan" aluminium, have introduced a new type of "interlocking" 50-lb. ingot, claimed to be safer, easier, and faster to handle than the usual type. Alcan have carried out an extensive programme of development and testing to determine the best ingot shape, and regard the new design as a significant advance in aluminium-ingot shape. They are in the process of converting completely to the new ingot, as their standard for the 50-lb. form of 99.5 per cent. aluminium, but meanwhile only limited quantities of the new ingot are available. On the new design the ingots are locked together in the three dimensions, and two metal straps serve to secure a neat bundle of 40 ingots. This bundle makes a convenient 2,000-lb. unit which stands up well to shocks in transit, and which can be stacked six-high with other bundles to form a stable pile. The securing straps, which are prevented from slipping by the wasp-waist design of the ingots, can be easily removed, and individual ingots lifted out. Unstrapped bundles or part-bundles may be moved by fork-lift truck.

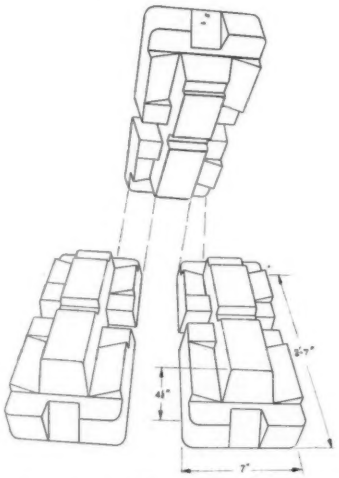


FIG. 1.—*New type of "interlocking" 50-lb. ingots, introduced by Aluminium Union, Limited, which are readily separated by lifting and which may be stacked six-high in bundles of forty ingots.*

Bonding Agent

The need has long been felt of a method of producing castings of greater precision, using equipment and skills found in the average foundry. There is now being offered by F. W. Berk & Company, Limited, of Portman Square, London, W.1, a material known as Petro Bond, which acts as a sand bonding agent in the presence of oil, and enables foundrymen to bond sands without the use of water.

By many founders, the presence of water in a moulding sand has always been regarded as a necessary evil. With the use of the new material it is claimed that low sand permeability becomes less of a factor to be contended with, as, due to the smaller amount of gases evolved during pouring, sand grain-size may be reduced to a point hitherto considered unsuitable for normal green-sand applications.

A sand compounded for the new bonding medium consists of a mixture of fine-grade sand, the special sandbinder, oil and a small amount of a catalyst, the cheapest of which is methylated spirits. The fine grade of sand used imparts a particularly fine finish to the surface of a casting, and fettling required can thus be reduced to a minimum and often eliminated entirely, it is stated. Patternmakers, who constitute the most exacting section of the industry are reported to be using sand of this type for pattern moulds.

Hitherto, use of the special sandbinder has been confined principally to the non-ferrous foundries where results, especially with aluminium, have been particularly good. The material is, however, being adopted for iron castings, although here it is found that the best results are obtainable on thin-section castings. Bearings, valves, impellers, dies and plaques are only a few of the types of casting which are reported as being produced in the new medium, and development work at present in hand indicates the probability of a more general application of the material very shortly. The sand may be used as a facing for green-sand moulds or, alternatively, being reusable, it is often advantageous to make the entire mould in the sand in order to eliminate contamination. The mix can be used a number of times without remilling and is easily rejuvenated after a number of casts by remilling with the addition of small quantities of binder, oil and alcohol.

As well as the binder itself, the suppliers are now offering a ready-mixed Petro Bond sand which requires no further processing prior to moulding; this, it is expected, will be of considerable interest in the smaller foundry where milling facilities are not available.

Faceshield

Safety Products, Limited, Holmethorpe Avenue, Redhill, have added a new model to their safety faceshield range (Fig. 2). It is known as the "Supervizor 500" faceshield, and is designed for heavy-duty work. Special features include a fibre brow-guard extending well over the head; worm-gear adjustable headband enabling alteration to size by a simple flick of the finger, and keyhole slotting on the vizors, making dislodgment virtually impossible. All types of prescription spectacles or goggles may be worn with the faceshield without discomfort.

FIG. 2.—*Faceshield made by Safety Products, Limited, of Redhill, Surrey.*

EVODE, LIMITED, of Stafford, recommend their Evostick "impact" adhesive for fixing thermal-insulation board. The adhesive is a one-part single-solution synthetic cement, which is applied to both surfaces to be joined, and allowed to dry for 15 minutes. After this time the adhesive has developed "resin tack," which means that although the surfaces feel quite dry to the touch they will make a permanent bond immediately they are brought together. It enables insulating board to be glued to any roofing or soffit material, such as metal, concrete, asbestos, cement, wood, and plaster, etc., and is waterproof and heat-resistant.

E

British Blast Furnaces in the December Quarter, 1958

(These tables are published through the courtesy of the British Iron and Steel Federation.)

Derbyshire, Leicestershire, Notts, Northants, and Essex.

Name of firm.	In blast at end of the fourth quarter, 1958.					Weekly average in blast.	Total existing at end of quarter.
	Hematite.	Basic.	Foundry and forge.	Ferro-alloys.	Total.		
Clay Cross Co. (Iron & Foundries)	—	—	—	—	—	—	1
Ford Motor	—	—	1	—	1	1	1
Holwell Iron	—	—	2	—	2	2	4
Kettering Iron & Coal	—	—	1	—	1	1	2
Renishaw Iron	—	1	1	—	2	2	2
Sheepbridge	—	1	1	—	2	2	2
Stanton Ironworks: Stanton-by-Dale	—	—	4	—	4	4	5
Staveley Iron & Chemical	—	—	3	—	3	3	4
Stewarts and Lloyds: Corby	—	4	—	—	4	4	4
Wellingboro' Iron	—	1	—	—	1	1	3
TOTAL	—	7	13	—	20	20	28

Lancashire (excl. N.-W. Coast), Denbighshire, Flintshire, and Cheshire.

Brymbo Steel Works	—	1	—	—	1	1	1
Darwen & Mostyn Iron	—	—	—	1	1	1	2
Lancashire Steel Manufacturing	—	2	—	1	3	3	3
Summers, John	—	2	—	—	2	1.9	2
TOTAL	—	5	—	2	7	6.9	8

North-West Coast.

Barrow Ironworks	2	—	—	—	2	2	4
Charcoal Iron	—	—	—	—	—	—	1
Millom Hematite Ore & Iron	2	—	—	—	2	2	2
United Steel: Workington	2	—	—	—	2	2	3
TOTAL	6	—	—	—	6	6	10

Lincolnshire.

Appleby-Frodingham Steel	—	3	—	—	3	3.5	4
Lysaght's Scunthorpe Works	—	3	—	—	3	3	3
Thomas, R., & Baldwins: Redbourn	—	3	—	—	3	3	3
TOTAL	—	9	—	—	9	9.5	10

North-East Coast.

Consett Iron	—	2	—	—	2	2	3
Dorman Long (Steel): Acklam	—	2	—	—	2	2	4
Redcar	—	—	—	—	—	—	2
Bessemer	—	1	—	1	2	2	3
Clay Lane	—	2	—	—	2	2	2
Gjers, Mills	2	—	—	—	2	2	3
Normanby Iron Works	2	—	—	—	2	2	3
Skinningrove Iron	—	2	—	—	2	2	3
South Durham Steel & Iron: West Hartlepool	—	2	—	—	2	2	2
Cargo Fleet	—	2	—	—	2	2	3
TOTAL	4	13	—	1	18	18	28

Scotland.

Bairds & Scottish Steel: Gartsherrie	1	1	1	—	3	3	3
Carron	—	—	1	—	1	1	4
Colvilles: Clyde Works	—	1	—	—	1	1.7	3
Ravenscraig	—	1	—	—	1	1	1
Dixon's Ironworks	—	—	—	—	—	—	6
TOTAL	1	3	2	—	6	6.7	17

South Wales and Monmouthshire.

Briton Ferry Works	1	—	—	—	1	1	1
Guest Keen Iron & Steel: Cardiff	—	2	1	—	3	3	4
Thomas, R., & Baldwins: Ebbw Vale	—	3	—	—	3	3	3
Steel Company of Wales: Margam	—	4	—	—	4	3.4	4
TOTAL	1	9	1	—	11	10.4	12

Paisley College Extension

Because there are now twice the number of pupils at Paisley Trades College compared with six months ago, plans to double the size of the new building—the Reid Kerr College—have been prepared. The College is the first trades school to be built in Scotland since the war and plans for the extension, which will cost about £300,000, are presently before the Scottish Education Department. There are now 1,400 pupils with 27 instructors under the principal, Mr. R. S. Elliot. The new college in Renfrew Road, Paisley, admitted its first pupils in September last, 200 of them are new students in engineering, transferred from Paisley Technical College, which has been overcrowded for some time. In the next two years that number will be doubled and the Reid Kerr college will become the largest engineering school in Scotland. To date £250,000 has been spent on the building and £72,000 on equipment, including a gift of £13,000 from Babcock & Wilcox, Limited, and machinery worth £5,000 given by Rolls-Royce, Limited.

A NEW COMPANY, Griffin & George (Research and Development), Limited, has been formed by the Griffin & George group of companies. New laboratories are to be designed and equipped for research into the development of new and improved scientific apparatus for laboratory use and process control. The research director is Dr. A. J. P. Martin, F.R.S., joint winner with Dr. R. Synge of the 1952 Nobel Prize for chemistry.

Parliamentary

Identical tenders for the supply of cast-iron pipes to the Staffordshire Potteries Water Board formed the subject of a question by MR. ELLIS SMITH to the PRESIDENT OF THE BOARD OF TRADE, in the House of Commons recently. Mr. Ellis Smith asked the President if he would reconsider his previous decision and instruct the Registrar of Restrictive Trading Agreements to give the matter priority before the Restrictive Practices Court, in view of the fact that these tenders had been submitted and had caused frustration to the Water Board in the discharge of its financial responsibilities.

MRS. SLATER also asked the President if he was aware of this identical tendering and if he would instruct the Registrar of Restrictive Trading Agreements to give the matter priority.

SIR DAVID ECCLES replied that the only registered agreement relating to cast-iron pipes was terminated on December 31, 1958, so that the question of priority for the Court did not now arise.

MRS. SLATER said was it not significant that this should be cancelled in 1958, when representation was made to the Board of Trade as far back as 1957? This large undertaking, with a £3,000,000 capital expenditure, had put out tenders for cast-iron pipes and received four identical tenders. Did not that make a farce of tendering and hold local authorities and joint boards at the point of a pistol in the hands of these firms which were nothing more or less than a monopoly? In reply Sir David Eccles said the agreement had now been abandoned and, if he could venture to give any advice to the Board concerned, it would be that it might call for new tenders.

The matter was again referred to last week by MR. SWINGLER who asked Sir David Eccles if he was not aware that some suspicion had arisen as a result of the sudden cancellation of the agreement following submission of the tenders, and could the Minister now give a firm assurance that collusion to hold up prices for the supply of cast-iron had now definitely ended. To which Sir David Eccles replied that he thought the termination of the agreement proved the usefulness of the Restrictive Practices Court, and that now the agreement no longer existed he hoped that tenders might be more competitive.

TO MRS. SLATER who asked the President if he was aware that there was a feeling that the Board of Trade had by no means taken the action it should have done by referring the matter for further inquiry, in the interest of all local authorities with large-scale equipment, and if at this stage he would make some recommendation, Sir David Eccles replied that it was now a matter for the Court.

(*Continued at foot of col 2.*)

British Blast Furnaces in the December Quarter, 1958—*continued*

Staffordshire, Shropshire, Worcestershire, and Warwickshire.

Name of firm.	In blast at end of fourth quarter, 1958.					Weekly average in blast.	Total existing at end of quarter.
	Hematite.	Basic.	Foundry and forge.	Ferro-alloys.	Total.		
Goldendale Iron	—	—	1	—	1	1	2
Lilleshall Iron & Steel	—	—	1	—	1	1	2
Shelton Iron & Steel	—	2	—	—	2	2	3
Stewarts and Lloyds: Bilston	—	1	—	—	1	1	2
TOTAL	—	3	2	—	5	5	9
Sheffield.							
Park Gate Iron & Steel	—	2	—	—	2	2	2
GRAND TOTAL	12	51	18	3	84	84 5	124

Weekly Average Number of Furnaces in Blast during the December Quarter, 1958, and the Previous Four Quarters

District.	1957.	1958.			
	Dec.	March.	June.	Sept.	Dec.
Derby, Leics., Notts., Northants and Essex ..	22.6	22.2	21	19.2	20
Lancs. (excl. N.-W. Coast), Denbigh, Flint, and Ches.	6 6	7	6.4	7	6 9
Lincolnshire	10	9.7	9.6	9 1	9.5
North-East Coast	20 5	21	19.2	17.7	18
Scotland	9 9	8 8	8.9	7	6.7
Staffs., Shrops., Worcs., and Warwicks.	6.2	5.4	5	5	5
South Wales and Monmouth	11	11	10.9	10.9	10.4
Sheffield	1 9	2	2	2	2
North-West Coast	8 8	8	7 8	5 7	6
TOTAL	97 5	95 1	90.8	83 6	84 5

The following companies have furnaces in course of construction or rebuilding:—Lancashire Steel Manufacturing; Millom Hematite Ore & Iron; South Durham Steel & Iron (West Hartlepool); Steel Company of Wales; J. Lysaght's Scunthorpe Works.

Big Contracts for British Industry

In the face of Japanese and Italian competition the Hawker Siddeley Group, Limited, has won an order worth over £2,250,000 from Argentina to supply six 10-mw. Brush-Ljungström turbo-generators. Commenting on the order, Sir Roy Dobson, managing director of the Hawker Siddeley Group, pointed out that the award followed hard on the heels of a Malayan order for £315,000 for free-piston gas/turbo-electric generating sets, an order from Finland for £280,000 for power-station equipment, and an order from Vancouver for Mirrlees diesels of £240,000. Argentine contracts worth £2,000,000 were received by the group 18 months ago for rural diesel-electric power-stations.

Another big contract is that placed by the Central Electricity Generating Board with the General Electric Company, Limited. It is for over £2,500,000 and is for two reheat turbo-generator sets and feed-water heating plant for Northfleet power-station, bringing to over £7,500,000 the value of GEC equipment installed there.

The company has also won a contract valued at over £200,000 for the supply of two turbo-blowers for the furnaces at the new works of the South Durham Steel & Iron Company, Limited, West Hartlepool.

Correspondence

STATUARY FOUNDING

To the Editor of the FOUNDRY TRADE JOURNAL

SIR,—As manager of a statuary foundry, I have read with interest the article in *Sunday Times*, dated January 4. Every art foundry is unique, but the one illustrated is, I hope, unique in its untidiness.

Mention is made in the article of a number of sculptors from this country, France, Holland and other countries of the Continent who have work cast in France, but surely it would be more fitting to boost the skill of craftsmen of Great Britain. At our foundry, work is in progress for America, Australia, Holland, etc., to mention a few countries, as well as important commissions for the cities of Great Britain, such as London, Liverpool and Coventry (a statuary group for the new Cathedral). Thus I could convince readers that at least one British foundry is not lagging behind the times.

The foundry, of which I am in charge, has been in existence for over 150 years, commencing life at Frome, Somerset, with a staff consisting of some of the finest craftsmen from France, Belgium and Switzerland, backed up by the leading sculptors of that time, such as Onslow Ford, Sir Hamo Thornycroft, Alfred Drury, sculptor of the Sir Joshua Reynolds statue in the courtyard of the Royal Academy, Sir Thomas Brock, sculptor of the Victoria Memorial, etc. From the beginning, numerous craftsmen have been trained to carry on the traditions of this satisfying craft. Nowadays, I have several young men among my staff who are settling down very well, turning out good work to the satisfaction of some of the sculptors mentioned in the article, and a great number not mentioned, such as Sir Charles Wheeler, K.C.V.O., P.R.A., Sir William Reid Dick, K.C.V.O., R.A., Sir Jacob Epstein, William McMillan, R.A., E. R. Bevan, Gilbert Ledward, P.P.R.B.S., C.B.E., R.A., James Woodford, C.B.E., R.A., Professor Frank Dobson, C.B.E., R.A., Mme. Dora Gordine, etc.

The writer well realizes that there will always be artists who prefer dealing with the foreigner in the same way that he, himself, prefers Danish butter, when he cannot get the good old English variety.—Yours, etc.

ALBERT L. PARROTT, M.I.B.F.

79, The Drive, Morden, Surrey.

Matthew Boulton Anniversary

The 150th anniversary of the death of Matthew Boulton, of Soho Foundry fame, will fall on August 17 this year. He died at the age of 81 and was buried in Handsworth Church. Matthew Boulton was the man who put Birmingham on the foundry map, by initiating new methods in manufacturing and in industrial welfare policy. He introduced a new source of power, steam, to the UK and made new engines to use that power; he also set up forms of labour control that were most certainly astonishing to 18-century observers. He was enormously flexible in outlook, very receptive to new ideas, a great leader, and a foundryman of immense skill and knowledge. His great desire was to enhance the repute of manufacturing.

Matthew Boulton's father owned a steel buckle works in Birmingham and, at the age of 21, Matthew became managing partner; ten years later he inherited the company. Dowries from his two marriages helped him to build a plant at Soho, and the new factory was completed in 1765, at a cost of £9,000. At first he continued to make products similar to those of the Snow Hill business, but later he extended these to metalware, plate, steel jewellery and "luxury" goods. It was when he had already made a world-wide reputation for the Soho Foundry that he met James Watt, the mechanic from Glasgow. Watt had shown his steam-engine design to several engineers, but they had decided that too much precision work would be required and that probably the design would get no further than a blue print. Matthew Boulton, however, thought otherwise, and the Soho Foundry was equipped with automatic machinery, producing on flow lines, with minimum manual handling and maximum materials handling—a remarkable set-up for the age. In 1777, William Murdoch started working at the foundry.

By its products, the Soho Foundry rid Birmingham of its repute for low-quality goods and debased coinage (the Mint set up at Soho made coins for use in the UK) and brought to the Midlands an unending stream of distinguished visitors. In both British management and foundry history Matthew Boulton warrants a first place. In this, the 150th anniversary of the year of his death, it is worthwhile to remember the foundryman for whom, on his death, a special commemorative medal was struck bearing the words "Inventas aut qui vitam excoluere per artis," which means "Men who have improved life by their discoveries in the arts." Boulton made foundrywork a great art.

Cast-steel Rolls for Germany

Two cast-steel rolls, manufactured by Armstrong Whitworth (Metal Industries) Limited, are to be installed in a German slabbing mill which is one of the largest in Europe. Cast by Jarrow Metal Industries, Limited, an associate of Armstrong Whitworth, the rolls are

claimed to be the largest produced in the Tyne area. They weigh over 40 tons each, and are made from heat-treated alloy-steel with a shore-hardness range of 35 to 40 per cent. Armstrong Whitworth obtained the contract because of the high quality of their products, although rolls of this type are also made in Germany itself.

DURING 1958 the Export Credits Guarantee Department covered 7 per cent. more "commercial" business than in the previous year, whereas U.K. exports as a whole dropped some 3½ per cent. The business covered during the year totalled £520,600,000. Increasing use is being made of ECGD's services and this is mainly due to policy of progressive improvement in recent years in the facilities it offers, both technically and as regards cost of cover, from steps taken to make its services more widely known, and from uncertain conditions in many overseas markets.

Congress Electro-heat

Nineteen papers by British authors are to be presented at the fourth International Congress on Electro-heat to be held at Stresa, Italy, from May 25 to 29. The number of delegates notified at the end of 1958 was 580, of whom 39 are British. Following are the titles of the British papers of major interest to foundrymen and the names of the authors: "Development of Electric Smelting in the British Commonwealth" by Dr. A. G. Robiette, D.SC., F.I.M. (Birlec, Limited); "Electric Surface-heating for Industry" by Mr. H. Reik, M.SC.(ENG.), M.I.MECH.E. (Isopad, Limited); "Control of Large Electric-arc Furnaces in Relation to their Effect on the Supply System" by Mr. J. W. S. Payne, B.SC., A.C.G.I. (British Thomson-Houston Company, Limited); "Vacuum Induction Melting and Casting" by Mr. F. L. Gladwin (Wild-Barfield Electric Furnaces, Limited); "Induction Melting Furnaces" by Mr. A. G. Allen (Birlec, Limited); "High-speed Cinematography of Sustained Power-arcs" by Mr. J. C. Needham, B SC., Electrical Research Association; "Developments in Resistance-heated Vacuum Furnaces" by Mr. M. Donovan (General Electric Company, Limited); "Electricity Supplies to Large Electric-arc Furnaces; Some Technical and Economic Considerations" by Mr. A. Haddock, B.SC., M.I.E.E. (Yorkshire Electricity Board), and "A Mains-frequency-induction Holding Furnace for Gravity- and Low-pressure Die-casting" by Mr. M. Gibbs and Mr. R. H. Barfield (Wild-Barfield Electric Furnaces, Limited), and Mr. E. C. Lewis (Alumasc, Limited).

Anyone interested in the Congress can obtain further information and a delegate's registration form from the secretary, The British National Committee on Electro-Heat, 2, Savoy Hill, London, W.C.2. In order to obtain accommodation in Stresa, registration forms should be returned not later than February 25. The Congress fee is 40,000 liras—about £23—which does not include hotel accommodation or travelling.

The British National Committee on Electro-Heat was reorganized about a year ago and its members now are: British Electrical and Allied Manufacturers' Association; British Electrical Development Association; British Iron & Steel Research Association; British Non-Ferrous Metals Research Association; Department of Scientific and Industrial Research; Electrical Research Association; Electricity Supply Industry (through the Electricity Council, Electricity Boards and the South of Scotland Electricity Board); Institute of Metals; Institution of Electrical Engineers; and the Iron and Steel Institute.

POA Minibition, 1959

The 1959 Minibition will again be held in conjunction with the annual conference of the Purchasing Officers Association, at Folkestone, from September 24 to 25. The skill and ingenuity of the design staffs of the various companies participating will again be "put to the test" to display as attractively as possible their firm's goods in an area 5 ft. by 3 ft. As in previous years the stands will be judged by a panel of well-known personalities. Last year's winners were, in the display class, Shell-Mex & B.P., Limited, who were awarded first place with Guest Keen & Nettlefolds (Midlands), Limited, running second. In the educational class, the stands of Precision Rubbers, Limited, and Morgan Crucible Company, Limited, took first and second places respectively. Full details of the Minibition may be obtained from the Association at Wardrobe Court, 146a, Queen Victoria Street, London, E.C.4.

Rateable Plant and Machinery

A new list of all types of machinery and plant which a committee on rating considers should be liable to local rates on the principles established by the Rating and Valuation Act, 1925, is now published. The list revises and brings up to date the existing list now 30 years old, and if approved, will come into operation on April 1. The list is contained in the Report* of the Committee on the Rating of Plant and Machinery which was appointed by Mr. Henry Brooke, Minister of Housing and Local Government, to review the existing list as expressed in the Plant and Machinery (Valuation for Rating) Order, 1927. This Order divides plant into four classes as follow:—(1) Items for (*a*) the generation, storage, primary transformation or main transmission of power; or (*b*) heating, lighting, ventilating, etc.; (2) passenger lifts and elevators; (3) railway and tramway lines and tracks, and (4) items named in a list so far as they are "in the nature of a building or structure."

In Class 1 the committee have proposed that less electrical apparatus should be rated under the heading of "main transmission of power," so as to bring it into line with the rating of other forms of power. The list in Class 4 has become out of date and the committee say in their report that a number of bodies have argued that it would be preferable to abolish the list and rely on the general terms of the Act. The committee disagree with this view and have prepared a new list, adding a number of items to the list of rateable plant and machinery, including not only recent developments like nuclear reactors, radar and television masts, and wind tunnels, but also plant which existed in 1927 such as boilers, main pipelines, Bessemer converters, bridges, and precipitators. The new list omits a few items included in the old.

Exemption Proposals

The committee say that industrialists have complained of a tendency, in recent years, for more and more plant and machinery to be rated beyond what was intended by Parliament in 1925, and have proposed a number of ways in which the rating liability of plant might be restricted. On some of these proposals the committee have reached unanimous agreement and on others they have been obliged to record disagreement. They all reject the suggestion that plant which can be moved from place to place should be exempt. They are agreed in recommending that a new Order should expressly exempt ancillary moving parts of plant and machinery. (These are not normally rated, but the committee thinks the position should be put beyond doubt.) Agreement has not been reached on two other proposals. One is to exempt plant which moves or rotates, and the other is to exempt plant below certain dimensions which in ordinary business practice is moved about.

The Minister is empowered by the Act of 1925 to make a new Order confirming the statement prepared by the committee which would replace the Order of 1927. It is his intention that the new Order should come into force on April 1, and he will take into account any representations on the report of the committee which are received in the Ministry by February 28.

* Report of the Committee on the Rating of Plant and Machinery, obtainable from HMSO, price 2s. 6d. net.

SPEAR & JACKSON, LIMITED—Mr. G. R. A. Wilson, a special director of the company, has been elected to the board.

Publications Received

Giesserei-Kalender, 1959. Published by Giesserei-Verlag G.m.b.H., 27, Breitestrasse, Düsseldorf, Germany; price DM 3.50.

For any foundrymen capable of reading German, this book is very good value for money. It opens with a calendar for this year with just sufficient space to insert an engagement, unless it be a conference date, when the printed notice takes up all the available room. However, there are a few blank leaves at the end for making extended notes. The calendar is followed by what is usually headed in English by "Useful Data." As one gets deeper into its 500-odd pages, the data get extended into small articles on matters of current interest, with the main objective of giving facts and figures about new materials, alloys cast, the production and productivity of each branch of the industry. Full details are given of the German foundry organizations and the cardinal information as to those of the rest of the world. The ever-increasing list of foundry publications is well set out and the information given is correct and reasonably up-to-date. This year's issue is a page or two smaller than the 1958 edition, and this is commendable as there is always a tendency for these pocket handbooks to grow until they become unwieldy and carry much matter that could be deleted without detriment to their usefulness. The book ends with a buyers' guide, which is confined to advertisers in *Giesserei*.

Accidents—How they Happen and How to Prevent Them, No. 38. Published by Her Majesty's Stationery Office, York House, Kingsway, London, W.C.; price 1s. 3d. or 6s. 4d. post free, per annum (four issues).

The reviewer deems this issue the best so far printed. In the past, space has been given to obviously infrequent or even rare accidents, but this issue is largely devoted to cases where accidents are preventable, or where their severity can be reduced greatly through the use of protective clothing or equipment. One safety device illustrated, which is very important, is provision of a knuckle shield on wheelbarrow handles. There are quite a number of cases cited in the trade union bulletins of money being paid to workmen by way of compensation for hand injuries when operating wheelbarrows and the like (see p. 151 of this issue of the JOURNAL). The example illustrated is for use with the wooden type, but it should not be beyond the ingenuity of the works management to weld a similar contraption on steel barrows. There are useful hints given in the booklet on ladle maintenance and the unsafe use of a planing machine. The main purpose of this issue, however, is to propagate measures designed for the reduction in number and severity of the common kinds of accident.

Steel Review, No. 13. Published by the British Iron and Steel Federation, Steel House, Tothill Street, London, S.W.1.

This issue opens with a masterly review of the changes in the steel industry which took place last year, both in the home and export trades. The production of crude steel fell by 1 per cent. compared with 1957 in the first quarter, by 10 per cent., in the second, 16 per cent., in the third and possibly by 18 per cent., in the fourth, the last figure meaning that the industry was only working at 75 per cent. capacity. It is an interesting commentary that the efficiency of the industry is such that it can still operate at a profit. Historically, the foundry industry has always followed the same trend as steel production, but now this balance is disturbed by increased use of light alloys and other factors. An article in this *Review* on "Research: Life and Blood of the Steel Industry" is illustrated with coloured photographs of unknown magnification. This appears to be a case of using colour for the sake of using colour and is to be deplored. Two articles the reviewer really appreciated were the "Next Ten Years in Middle Africa" and "The Steel Shareholder." They are of real interest to the general public.

Development of the Steel Industry. A Report issued by PEP, 16, Queen Anne's Gate, London, S.W.1; price 2s. 6d.

"In the event of a European Free Trade Area, more Continental competition may be expected in Southern England, which consumes about 30 per cent. of national usage (of steel products) but has no major steelworks." This is a quotation from a descriptive covering letter enclosed with the booklet bearing the title given above, and the reviewer regards it as an example of loose thinking. It should cost no more to ship steel to southern England from South Wales, Cleveland, or Glasgow, than it does from Antwerp, Calais or Le Havre, especially as individual users—except perhaps the railways—do not take shiploads of steel. If Continental makers can produce cheaper than the British, they will sell their goods on the doorsteps of British steelmakers and *vice versa*. Apart from this criticism the reviewer considers the Report itself to be alike illuminating and interesting.

BSFA Bulletin, Vol. 2, No. 9. "Standards of Acceptance." Issued by the British Steel Founders' Association, Broomgrove Lodge, Broomgrove Road, Sheffield, 10.

The reviewer tried to read this *Bulletin* through the spectacles of a buyer of steel castings and found it a little unsatisfying. Whilst he is told of the meticulous inspection throughout manufacture to produce a high-grade component, he is left with the impression that finally there are, or may be, some defects which may require eradicating. Thus a residue of doubt is left in his mind as to whether steel castings are invariably satisfactory. Surely sales literature should be more forthright, whilst still retaining truth. As one of a series, this *Bulletin* is quite satisfactory, but is not so adjudged if the reader is unfamiliar with the earlier issues.

Transport Age, Vol. 2, No. 8. Published by the British Transport Commission, 222, Marylebone Road, London, N.W.1.

The very high standard established initially for this magazine has been well maintained in this issue. There is, for instance, a delightfully illustrated article "Where Salmon Run," which cannot fail to arouse nostalgic memories of those whose hobby is fishing. Of more practical aspect are articles on containers, zonal collection and delivery, the South Wales Ports and a number of similar well-illustrated contributions from authoritative writers.

Mechanical World Electrical Yearbook, 1959 (55th edition). Published by Emmott & Company, Limited, 31, King Street West, Manchester, 3; price 4s. post free.

There is quite a substantial amount of new matter and revision of previous data published in this edition of the yearbook, which even increases its usefulness.

New Catalogues

Die Castings. In publication No. KA3/5m., Kaye Alloy Castings, Limited, Anne Road, Handsworth, Birmingham 12, and Harper Street, Presteign, Radnorshire, give some historical information (the company was founded 25 years ago), details the zinc and aluminium alloys used, and reproduces pictures of a number of the company's products. Its sixteen pages are excellently illustrated and splendidly displayed. The opening section "Design and Manufacture of Dies," whilst showing some of the excellent facilities the company possesses for co-operating with the customers, fails to invite the latter to avail themselves of this service except by implication. The illustrations of the firm's foundries show that good use is being made of stillages, but they still show a few heaps on the floor. Probably this is inevitable, but they might perhaps be removed be ore taking photographs. The catalogue is a good example of modern publicity for castings.

High-duty Cast Iron. The Incandescent Heat Company, Limited, Smethwick, in publication V.11C cover a range of high-duty irons carrying the trade mark "Incanite." Within this range, of which there are four grades, are irons having between 14 and 24 tons tensile strength. It is a nicely illustrated four-page leaflet, but the reviewer has two criticisms to make. An opening statement includes the word "precision" (which the reviewer considers should be qualified), whilst the balance of the leaflet deals with the metal and its properties. The second criticism is the inclusion of photomicrographs giving no magnification and reproduced as a blue picture. The eight illustrations chosen to show the type of castings made in this metal could not very well have been bettered; unquestionably they are excellent examples of the art of casting.

Oil Filtration. Now that so many foundries use oil as fuel, any help they can get to use it efficiently is well worthwhile. One aspect of this is dealt with in a 22-page brochure issued by Auto-Klean Strainers, Limited, Hounslow, Middlesex, and that is the incorporation of strainers into the system. In this type, as the name indicates, the filters can be cleaned without interrupting the flow of fuel to the plant. The brochure is nicely illustrated, but there is one criticism the reviewer has to make and that is the use of yellow ink. Yellow on white paper is difficult to see—as will be noticed in any child's stamp album, where a high percentage of stamps of this colour are invariably inserted upside-down. Fortunately, in this case only one graph is printed in yellow.

Precision Castings. The castings illustrated and described in publication No. B.28, issued by Deloro Stellite, Limited, Highlands Roads, Shirley, Solihull, Warwickshire, are made from the alloy Stellite by the lost-wax process. This is available in four grades with a room-temperature tensile strength range of from 21 to 47 tons per sq. in., with elongation going from 0 to 10 per cent. At a temperature of 850 deg. C., the same alloys have strengths varying between 25 and 40 tons per sq. in., though the value for the composition originally having maximum elongation suffers a substantial drop. Information is also given on tolerances to be expected, and finishing by grinding and, sometimes, reamering if necessary.

Unit Dust Collectors. In catalogue D.3, A. E. Griffiths (Smethwick), Limited, Booth Street, Birmingham, 21, illustrate and describe two types of unit dust collectors—trade marked "Micronette" and "Micromaster," the latter being of higher capacity and greater scope. For dealing with magnesium and its alloys, the units are specially equipped to eliminate the explosion hazard. The dust particles are separated from the air by filtration, as dust-laden air is drawn into the unit and collected in a removable tray. The separation is effected in two stages. The catalogue usefully carries a complete specification of the plant covered.

Abrasive-wheel Cutting-off Machines. Francis W. Birkett & Sons, Limited, P.O. Box No. 16, Cleckheaton, Yorks, have issued two leaflets, one covering the Franber high-speed cutting-off machine which takes 12- or 14-in. abrasive flexible cutting wheels placed 8½ in. from the left-hand side of a 30- by 23½-in. table. Using the larger size of wheel it employs a 5-h.p., 1,440-r.p.m. 3-phase motor with push-button starter, giving a 4½-in. maximum depth of cut. The second leaflet covers a range of centre-grinder discs; cup discs; cutting-off wheels and mounted points.

Remote-control Equipment. Dewhurst and Partner, Limited, Inverness Works, Hounslow, Middlesex, have issued a folder covering push-button control-equipment. For the face-plates of the equipment a range of 20 colours is shown and this presents a good example of colour printing. Other items listed and described are push-button markers, wide-angle and oil-tight indicators carrying such notices as "call accepted," "lift coming," etc. All of these go with designs of unit boxes, push-buttons and switches.

Dust-control Units. Leaflet No. 60 received from Dallow Lambert & Company, Limited, Thurmaston, Leicester, serves as a reminder that the best method of reducing dust in factories is to collect it at the source of production. The catalogue carries a series of pictures of neat-looking collection units applied to—*inter alia*—double-wheel grinders, swing-frame grinders, patternmaking machinery and machine-tools handling cast iron.

Fork-lift Trucks. Of interest to pipe-founders is the side lifting and carrying truck, known as the Lancer side-loader described in a folder received from Lancers Machinery, Limited, 41 Knightsbridge, London, S.W.1. Illustrated is a six-ton model lifting up to 10 ft. at 40 ft. per min. and with a lowering speed of 60 ft. per min. Using a Ford 4D diesel engine, the loader can travel at the maximum speed of 22 m.p.h.

Sports-ground Accessories. The En-Tout-Cas Company, Limited, Syston, near Leicester, have issued a priced catalogue of a very complete range of sports-ground accessories. As so many foundries include sports facilities in their social activities this is a very useful catalogue to place in the hands of the works' purchasing officer.

Air Compressors. In publication No. 350 C. E. Broom & Wade, Limited, High Wycombe, give line drawings and a general specification of a two-stage double-acting air-compressor, type L.2000. Wisely, the tabular matter has been set out in both metric and English measurements. The drawings are very well and clearly executed.

Refractories. A 16-page booklet issued by Industrial Products (Refractories), Limited, Warwick House, 9, Northumberland Road, Sheffield 10, details the composition and properties of an interesting and wide range of the refractories which the company handles.

Company News

R. A. Lister & Company, Limited

Record turnover and record net profit in the year to September 30, 1958, and the strength of the reserve position has given the board of R. A. Lister & Company, Limited, manufacturers of petrol and diesel engines, electrical lighting plant, etc., of Dursley (Glos), a long deferred opportunity of increasing the dividend. Group net profits rose to £488,120 (£475,939) and the dividend is increased by 2½ per cent. to 12½ per cent.

The trading period, states the chairman, Sir Percy Lister, was far from normal and the encouraging results were partly due to the steady development of the principal subsidiary and associated companies, both at home and overseas. In the home market there was a growing demand for the group's products and the marine company enjoyed another successful year.

Political and economic difficulties of many foreign countries make any attempt to forecast future trends hazardous, but the board looks to the future with "cautious optimism."

UNIVERSAL ASBESTOS MANUFACTURING COMPANY, LIMITED—Dividend is being raised from 10½d. to 1s. per 5s. share with a final of 7½d. per share for the year ended September 28, 1958. Group profit, after all charges, including depreciation, advanced from £201,358 to £335,237, and the net profit rose from £84,309 to £151,933.

BRITISH INSULATED CALLENDER'S CABLES, LIMITED—The authorized capital has been increased to £25,000,000 from £22,000,000 in order to provide for the additional capital required for the proposed acquisition of shares in the Telegraph Construction & Maintenance Company, Limited, the offers for which were circulated earlier this month.

PYRENE COMPANY, LIMITED, manufacturers of fire extinguishers, etc., of Brentford (Middx)—Shareholders took up 555,083 (99.1 per cent.) of the rights issue of 560,000 5s. ordinary shares at 16s. Applications for 4,917 excess shares totalled 429,023. In order to achieve a fair distribution the directors are allotting the shares as follows:—Up to two, in full; three to 256, three shares; 257 to 2,000, five shares; 2,001 and thereafter, seven shares.

COVENTRY GAUGE & TOOL COMPANY, LIMITED—The company proposes to increase the authorized capital by the creation of 1,400,000 ordinary 10s. shares. There is no present intention of making any issue, but the directors feel it is desirable that the company should have capital available for issue and thus provide for any eventuality. Alterations in the memorandum of association are proposed and shareholders are recommended to agree to the adoption of new articles of association.

WESTINGHOUSE BRAKE & SIGNAL COMPANY, LIMITED—Due to capital expansion programmes of the holding company and larger subsidiaries nearing completion, commitments for capital expenditure in the year to September 27, 1958, dropped to £347,000 (£856,000). Group trading profit for the year declined by £108,365 to £2,035,101 and, although several subsidiaries failed to maintain the previous year's level, two produced profits greatly in excess giving an aggregate improvement. The net profit is £879,235 (£906,351) and the dividend is maintained at 10 per cent.

SMITH & WELLSTOOD, LIMITED, stove, range, and catering-equipment manufacturers, of Bonnybridge (Stirlingshire)—The interim dividend on account of the year ending June 30, 1959, is 2½ (1½) per cent. and the board states that in restoring it to the rate from which it was cut two years ago its intention is solely to reduce the disparity between the interim and final dividends; there is no implication of a higher year's total. For the half-year to December 31, 1958, group profits are approximately the same as in the corresponding half-year in 1957 and trading conditions remain "far from easy."

HUNSLET (HOLDINGS), LIMITED, holding company for locomotive builders, of Leeds—The chairman, Mr. John F. Alcock, announced at last week's meeting that the company, in conjunction with its South African associate, was developing a new range of electric mining locomotives. The locomotives were of an outstanding design and the company and its associate hold the sole rights of manufacture under world patents, he said. Referring to repeat orders by the BTC for the company's standard shunting engine, the chairman said that orders of this kind were of great assistance when selling abroad. Export orders, however, must remain the mainstay of the company.

New Patents

(Copies of complete specifications are obtainable from the Patent Office, Sales Branch, 25, Southampton Buildings, Chancery Lane, London, W.C.2, price 3s.)

803,332. Henry Wallwork & Company, Limited, and C. M. G. Wallwork, Roger Street, Redbank, Manchester, 4.

Mechanized casting process relating to quantity production, the use of which it is claimed results in the minimum of labour and handling of materials; more accurate castings which require little or no dressing; and close control is maintained over foundry variables.

803,343. Birlec, Limited, Tyburn Lane, Erdington, Birmingham, 24.

A method of, and apparatus for, discharging successive quantities of molten metal from a container, for example a furnace, wherein the metal is held in a molten condition to a die-casting machine mould or like appliances. By the invention, it is claimed, compensation is made for the changes of position of the metal level (in other words the distance between the metal level and the discharge orifice as the metal is poured off).

803,397. Dr. F. Raschig, G.m.b.H., Ludwigshafen am Rhein, Germany.

Improvements in, or relating to, the production of moulds and cores for casting, especially suitable for use in steelfoundry work. In particular this patent deals with novel self-setting binding agents and their use in production. The sand is mixed with a binding agent which consists of one or more drying oils (such as linseed oil), one or more oil-soluble glycerol or pentaerythritol phthalate or maleate resins, and at least one siccative. The mixture is then moulded and hardened.

A typical example would be, for the binding agent, linseed oil 50 parts, glycol maleate resin 45 parts, siccative solution 5 parts. This is then boiled either together or separately to stand oil. This is subsequently used in the following composition which is employed as the moulding composition: quartz sand 80 parts, moulding sand 20 parts; binding agent 2.0 parts. The green-sand strength of this will be 90 gm. per sq. cm. After 12 hours air-drying, the cores thus made will have a transverse strength of 25 gm. per sq. cm. and after further oven-drying at 220 deg. a transverse strength of 70 gm. per sq. cm.

News in Brief

A NEW SHOWROOM and office has been opened by A. A. Jones & Shipman, Limited, at 50/52, Great Peter Street, London, S.W.1.

THREE FIRMS at Otley have been fined for occupying parts of a factory without having served notice under the Factories Act of their intention of so doing.

GRIFFIN & GEORGE (SALES), LIMITED, laboratory furnishers, announce that their offices and warehouses at Cheetham Hill Road, Manchester, 4, are now connected to the Telex system on Telex 66-450.

BRITISH INSULATED CALLENDER'S CABLES, LIMITED, announce that the address of the branch office at Derby is now Hartington Street, Derby, and that new offices have been opened at Station Terrace, Queen Street, Cardiff.

WITH THE FORMATION by R. & J. Dick, Limited, Glasgow, of a subsidiary company, R. & J. Dick (Canada), Limited, all the firm's products will now be available from stock at the new warehouse at Kitchener, Ontario.

THE OILHEAT DIVISION of Henry Wilson & Company, Limited, Kirkby, Liverpool, is expected to transfer to buildings on a new site adjoining the present Cornhill Works, in July. The company has acquired the lease on a factory there which gives another 10 acres.

A 40,000,000 electron-volt electron linear accelerator constitutes an order worth £250,000 placed with the Metropolitan-Vickers Electrical Company, Limited, Manchester, by the City of Hamburg for Deutsches Electronen-Synchroton (DESY) Research Group, Hamburg.

LARGEST PASSENGER SHIP (approx. 9,000 tons d.w.) built on the Tyne for over 50 years and the largest in the Canadian Pacific fleet had its keel laid by Vickers-Armstrongs (Shipbuilders), Limited, at Walker-on-Tyne on January 27. The ship will make voyages to Canada and winter cruises.

STOCKTON WORKS of Metropolitan-Vickers-Beyer-Peacock, Limited, has a £3,500,000 order on hand for 135 electric locomotives for the South African State Railways that will keep the works fully engaged for at least two years. Two locomotives from Birkenhead will comprise the first shipment in mid-March.

THE UNITED KINGDOM ATOMIC ENERGY AUTHORITY has decided to make generally available, in micro form, all non-secret reports which have been prepared since 1947. Arrangements for the production of micro-copies have been made with Micro Methods, Limited, East Ardsley, Wakefield, Yorks, from which firm full details are available.

UNIVERSAL PATTERN & PRECISION ENGINEERING COMPANY, LIMITED, Kelvin Way, Crawley, Sussex, state that consequent on having discontinued their machining activities, the shop in which they were carried out will gradually be brought into production on metal pattern-equipment, and the pattern side of the business will be expanded to that extent.

NEW FLAW-DETECTION and high-speed pen-recording equipment, such as is used in heavy engineering, was demonstrated by Kelvin & Hughes, Limited, at their works at Hillington, Glasgow, during the week commencing January 26. Further demonstrations are to be given in other Scottish cities, Edinburgh being scheduled for this week.

STAVELEY IRON AND CHEMICAL COMPANY, LIMITED, Chesterfield, has started a recruiting drive for more first-aid workers, and has sent a letter to its 4,500 male employees asking them to take a course of instruction in first-aid, after working hours. The company will pay £4 a year to men who satisfy the St. John Ambulance Brigade standards.

SOME FIFTY of the largest colour prints ever seen in Scotland will be on view at the Adolf Morath Exhibition of photographs of industry in colour. The Exhibition, which is being held in McLellan Galleries, Sauchiehall Street, Glasgow, from February 3 to 11, was opened by Sir Andrew McCance, chairman and managing director of Colvilles, Limited.

A CONTRACT, worth $1,000,000, for the supply of iron pipes and special castings for a water scheme in Venezuela has been awarded to the Stanton Iron-works Company, Limited, near Nottingham. Recently the company introduced a four-day week for 800 men employed at three spun-pipe plants, and a spokesman for the firm has stated that the new contract will not affect short-time working, owing to the accumulation of stocks.

MR. KENNETH WALKINGTON, sales manager of the foundry and engineering divisions of Armstrong Whitworth (Metal Industries), Limited, Gateshead, leaves England on Monday on a tour that will take him to Africa, Asia, Australasia, and America within a period of two months. His trip is scheduled to end on March 27. It will be concerned with discovering the saleability of the company's crushing plant and other products, and visiting numerous agents en route.

THE £5,000,000 LOAN to the Sudan which was announced early last month, has been formally signed on behalf of Her Majesty's Government by the secretary of the Export Credits Guarantee Department and by the Permanent under-Secretary of the Ministry of Finance on behalf of the Sudanese Government. The loan, which is being given under section 3 of the Export Guarantees Act, 1949, will be used for the purchase of United Kingdom goods and will be repayable over a period of three years commencing two years from now.

A BALLOT among 70,000 engineering workers in Coventry to find the most popular period for the annual fortnight's holiday has shown an overwhelming demand for the holiday to be brought forward, Mr. C. H. Urwin, Coventry district secretary of the Confederation of Shipbuilding and Engineering Unions, said on January 29. The greatest support in a large vote was for the last week in June and the first week in July, closely followed by the first two weeks in July. Another ballot between these two periods is to be conducted after talks with the local education authority.

A NEW CENTRAL LABORATORY, covering 7,500 sq. ft., has been opened recently at the Iron and Steel Works of Richard Thomas & Baldwins, Limited, Redbourn, Scunthorpe. It houses three main departments—the shift-work, day and metallurgical laboratories, and its triangular shape enables rest rooms and offices common to the three departments to be incorporated. A compressed-air tube system for transporting samples of iron and steel from blast furnace and melting-shop departments has been installed. Service pipes include hot and cold water, distilled water, oxygen, compressed air, steam and coal-gas.

News in Brief

WILSONS AND MATHIESONS, LIMITED, Armley, Leeds, a subsidiary company of Radiation Group Sales, Limited, announce the impending closure of their foundry, at present manufacturing solid-fuel appliances. The work is to be transferred to one of the group's factories at Belper, Derbyshire. The manufacture of baths will also cease because of "excess national capacity for such manufactures." As a consequence, it is expected that about 300 foundryworkers will become redundant. Mr. Eric Bellingham, a director of the parent company, states that the manufacturing activities at Leeds will now be concentrated on gas appliances and sheet-steel pressing.

THE SPITAL BRIDGE (PETERBOROUGH) FOUNDRY of British Railways, Eastern Region, which commenced production in 1873, has been closed. It was opened by the old Great Northern Railway Company and then taken over by the London and North Eastern Railway Company, and has been turning out thousands of rail chairs a week as well as many other cast metal items, such as lamp-posts and heating stoves. The four furnaces have become unsafe and now it is likely that the foundry site will disappear in the general railway modernization scheme planned for Peterborough. Latterly only a dozen or so men have worked at the foundry and these have all found other work with British Railways.

TWO SCOTTISH UNDERTAKINGS—Colvilles, Limited, and Stewarts and Lloyds, Limited—are actively interested, in association with undertakings in the Dominion, in establishing a steelworks in New Zealand. The works will consist of two electric-arc furnaces for the production of steel from scrap and of a rolling mill plant. Its output will be 40,000 to 50,000 tons of merchant bars annually, and the cost will be about £2,500,000. It is hoped that construction will be completed in 1961. The operating company to be formed will be named Pacific Steels, Limited. Control will be held in New Zealand, with at least a proportion of the capital issued to the public there. At a later date it is hoped to establish a fully-integrated steel industry—that is, an industry producing steel through the smelting of ore. Whether this is feasible, however, has yet to be determined.

THE HON. RICHARD WOOD, M.P., Parliamentary Secretary to the Ministry of Labour, recently paid a four-day visit to the Midlands. He toured the Austin Motor Company works at Longbridge and later went to Coventry to address a meeting arranged by the Coventry Productivity Association. Mr. Wood told industrialists that failure to provide recruits with good training opportunities would prejudice hopes of an early industrial expansion and leave Britain with severe disabilities in world competition. He said that the present intake of craft apprentices would be completely inadequate in the future unless training schemes were expanded immediately, and added that those firms which were unwilling to start apprentices because of temporary economic slackness, were choosing a certain way of "missing the tide" when industrial expansion began again—this year or next. Speaking of overall unemployment in Britain he said that no doubt it would follow the usual trend in January and rise again that month, but there was still no reason to believe that the Ministry's estimate of a winter peak of about 600,000 was not on the high side. At the last count, shortly before Christmas, the total had fallen by 4,000 to 532,000. If inflation had been allowed to continue at the 1957 rate, it would have priced Britain out of world markets, Mr. Wood said.

Heavy Capital Expenditure by Ley's Foundries & Engineering

Capital expenditure by subsidiaries of nearly £600,000 during the year ended September 30, 1958, and contracts for like expenditure amounting to nearly £300,000 entered into at balance-sheet date, are reported by Ley's Foundries & Engineering, Limited. Most of the outlay was on the large mechanized foundry which is now in production at the Derby works of Ley's Malleable Castings Company, Limited. Further heavy capital expenditure at the Derby and Lincoln works is anticipated in the near future.

During the year fixed assets of the group increased from £1,770,531 to £2,237,263, of which £1,441,392 (£1,053,581) is represented by plant and machinery, etc. The group trading balance, with investment income, amounted to £954,628 (£925,110). The net profit is lower at £319,739 (£354,668) after heavier provisions for depreciation and tax. The dividend is repeated at 11 per cent. with a final of 5 per cent.

Research and Development affect GEC Profits

Continuing high expenditure on research and development, particularly in the nuclear field, and the increase in wages and other costs have again constituted a heavy burden on profits, state the directors of the General Electric Company, Limited. Although the company's turnover shows a slight increase, provisional results for the first nine months' trading, together with an estimate for the remainder of the year, indicate a continuing decline in profits. Moreover, the full benefits of reorganization have yet to be felt.

The company is cutting the interim on its £18,000,000 ordinary capital to 3 ($\frac{3}{4}$) per cent. for the year to March 31, 1959. The interim for 1957-58 compared with a previous payment of 4½ per cent., and was followed by a cut in the final from 8 per cent. to 6½ per cent.

Iron-ore Imports

Iron-ore imports in December, and the totals for last year and for 1957 are shown in the table below.

From	Month ended Dec. 31,	Year ended December 31.	
	1958.	1957.	1958.
	Tons.	Tons.	Tons.
Sierra Leone	70,615	728,822	729,327
Canada	109,836	3,041,374	2,229,976
Other Commonwealth countries and Eire	—	10,941	2,404
Sweden	288,276	4,280,862	3,151,545
Norway	21,874	233,225	285,074
Western Germany	—	154	5,115
France	40,993	624,904	487,404
Portugal	7,730	133,033	129,743
Spain	41,426	1,034,319	596,336
Algeria	119,575	1,513,585	1,437,760
French West Africa	15,433	608,405	337,440
Tunisia	56,542	740,835	581,950
Northern Morocco	8,450	234,458	128,303
Southern Morocco	41,748	401,715	371,719
Liberia	31,620	349,337	285,749
Venezuela	75,421	1,196,873	1,388,540
Brazil	56,954	677,107	676,304
Other foreign countries	690	102,354	188,011
TOTAL	987,183	15,912,303	12,912,700

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Personal

Mr. F. S. BEALE, director of English Steel Corporation, Limited, and its subsidiaries, flew to India on January 25, on a business tour.

Mr. J. D. PAYBODY, secretary to Mather & Platt, Limited, engineers and ironfounders, Newton Heath, Manchester, has been elected to the board.

Mr. J. W. HAMPSON, works manager, since 1951, of Walker Bros. (Wigan), Limited, engineers, has retired. He joined the firm as an apprentice in 1911.

Mr. JOSEPH L. BROOK, a director of Brook Motors, Limited, Huddersfield, has been elected Mayor of Huddersfield for the coming municipal year.

Tecalemit, Limited, of Plymouth, announce that Mr. R. R. PARKER has been appointed general sales manager, and Mr. S. C. KENNETT, deputy general sales manager.

Mr. M. SOFFA has been appointed to the board of directors of Jeltek, Limited, manufacturers of industrial protective clothing. He will continue to act in his capacity as general manager.

Mr. R. K. JACKSON, who is secretary of the Burnley section of the Institute of British Foundrymen has joined Metals & Equipment (Wolverhampton), Limited, as Lancashire representative.

Mr. W. L. SIMS, assistant managing director, Wadkin, Limited, manufacturers of woodworking machinery and machine-tools, Green Lane Road, Leicester, is now on a business tour in South Africa.

Mr. JAMES CUMMING, assistant export sales director of Raleigh Industries, Leicester, has been appointed to the board of the Triumph Cycle Company, Limited, a member of the Raleigh group.

Mr. J. W. GARDOM, of John Gardom & Company, is flying to India on February 16, accompanied by Mr. J. DIXON HILL, metallurgist of the company, for a short visit to inspect steel foundries and engineering works.

Mr. JOHN H. OSBORN, a director a Samuel Osborn & Company, Limited, Sheffield, was selected, on January 26, as prospective Conservative and Liberal Parliamentary candidate for the Hallam Division of Sheffield.

Mr. F. C. HOLLAND, who has been production manager at the Rover Company, Limited, Solihull, for the past 20 years received presentations from Mr. M. C. Wilks, joint managing director, on his retirement last month.

Mr. D. T. GREENHORN of Light Castings (Pty.), Limited, Benoni Road, Industrial Sites, Boksburg East, Transvaal, has announced his intention of visiting the Foundry Exhibition, to be held in Birmingham, in May. He will be accompanied by his son.

Mr. DAVID BROWN, chairman and managing director of the David Brown Corporation, Limited, Huddersfield, who is at present in Canada, was elected a Freeman of Toronto after he had opened the Farm and Industrial Equipment Trade Show in that city.

Mr. A. J. CHAMBERS, M.B.E., managing director of Projectile & Engineering Company, Limited, and chairman of PECO Machinery Sales (Westminster), Limited, left on January 31, for Delhi, accompanied by Mr. E. GASPER, the company's chief designer.

Mr. R. F. K. BELLAM, lately on the staff of international division of the American Machine and Foundry Company and previously with Tube Investments, Limited, has been appointed personal assistant to Mr. John Y. Sangster, chairman of the BSA group.

Major VICTOR T. MOUNTFORD, general sales manager of the Enfield Cycle Company, Limited, has been appointed to the board in place of Mr. G. H. SMITH, who has retired as a director and secretary. Mr. VICTOR L. YOUNG, a director, has been appointed secretary.

Mr. P. G. SMYRK joined the board of Johnson, Matthey & Company, Limited, on February 1, when he was also appointed joint managing director. Mr. Smyrk has hitherto been the manager of the export division of the company, and a director of several of its overseas subsidiaries.

Vice-Admiral Sir JOHN EATON has joined Marconi's Wireless Telegraph Company, Limited, as chief of administration at the company's research and development laboratories. In this capacity he will be responsible for all administration matters to the chief of research, Dr. E. EASTWOOD.

Mr. F. W. GARDNER, deputy chairman of C. A. Parsons & Company, Limited, has been appointed chairman of the company. He succeeds the late Sir CLAUDE GIBB. Mr. H. H. MULLENS, chairman and managing director of A. Reyrolle & Company, Limited, and a member of the Parsons board, has been appointed deputy chairman. Mr. G. M. BAKER, a director and general manager of C. A. Parsons, has been appointed managing director.

Managing director of S. A. Babcock-Smulders, Mr. ALAN WEBB, has been made Chevalier of the Order of the Crown for "services to the Belgian economy" in the latest Belgian Honours List. Mr. Webb's company is a 50 per cent. Belgian subsidiary of Babcock & Wilcox, Limited, and is at present engaged on orders valued at between £3,000,000 and £4,000,000. It is also a shareholder in Belgo Nuclaire S.A., a consortium of manufacturers in the nuclear-power industry.

Mr. ROBERT COATES DOVER, labour manager of Ashmore, Benson, Pease & Company, Limited, Stockton-on-Tees, and Mr. ERNEST WILLIAM TEMPLE, a moulder with the company, have both become Stockton Borough magistrates. Mr. Dover, who is chairman of Stockton, Thornaby and District Employment Committee, was one of the British productivity team which visited the United States. Mr. Temple is a Stockton Borough Councillor and chairman of the town's Labour Party.

Mr. J. T. DAVEY has been appointed secretary of the Pulsometer group. Mr. F. G. HOWSON has been appointed a director and general manager of Joseph Evans & Sons (Wolverhampton), Limited, a subsidiary of the Pulsometer Engineering Company. Mr. R. D. HIBBERD has been appointed general manager of the Pulsometer Engineering Company, Limited; Mr. R. G. W. BLISS and Mr. J. ELLIOTT have resigned from the positions of director and secretary respectively.

Mr. ELLIS BEDNALL, accident-prevention officer at Stanton Ironworks, was elected chairman of the Nottingham Industrial Accident Prevention Group at the annual meeting on January 21. Other officials elected were:—Mr. R. T. MILLHOUSE, vice-chairman; Mr. W. H. HARRIS, secretary; Mr. A. H. CHEETHAM, assistant secretary; Mr. A. STEWART, treasurer; and Mr. R. W. BYRNE. Mr. T. B. GLOVER, Mr. A. BARRADELL, Mr. R. W. ROSE and Mr. W. K. MARTIN, committee members. Mr. Harris said in his report that a four-day exhibition dealing with productivity and safety had been arranged with the Productivity Council and would be held at the Queen's Hall, Mansfield Road, Nottingham, from March 2 to 5.

Baker Perkins Foundry Machinery at work... *at Joseph Bloomer & Sons Ltd.*

This "Cadet" Rotary Table Shot Blast machine has been installed at Joseph Bloomer & Sons Ltd. where its high standard of finish and sound design have made it an extremely useful addition to this company's foundry equipment. The machine includes our patented bi-phase impeller system with low power consumption. No pits or special foundations were necessary. Please write for full details.

BAKER PERKINS
Foundry Machinery Division
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HISTORICAL NOTE

Joseph Bloomer & Sons Ltd. were established in 1860. At their Ladysmith Foundry and Chain Works, which are in Cradley, Staffordshire, they produce a wide range of castings for gas and calor gas cookers, agricultural and textile machinery, the motor industry, continuous burning fires and stoves and many other applications.

Raw Material Markets

Iron and Steel

Although pig-iron production is now appreciably lower than a year ago, output of all grades continues to be in excess of demand and fairly heavy stocks are carried at the furnaces. This means increased costs to the producers, who are making strenuous efforts to dispose of additional tonnages to both home and overseas buyers. There is little change in the home market, and while some tonnages are being sent abroad, competition is severe and prices quoted by overseas producers are low.

The reduction in ingot-steel output continues to reduce the intake of basic pig-iron at the steelworks, and, at the same time, has curtailed their requirements of ingot moulds and other castings. Output of basic pig-iron is more than adequate for consumption and stock needs, with a number of furnaces out of blast, and reduced outputs being obtained from other units.

Slight fluctuations have been reported in the demand for pig-iron from the foundries. The machine-tool industry has shown some recovery on account of a better export demand and this is reflected in a small increase in the call for pig-iron from foundries catering for the industry. The foundries connected with the domestic appliance trade also continues to take up larger tonnages. Despite these developments, however, a much larger overall demand for castings is required to employ the trade to capacity.

The call for low-phosphorus irons from the engineering and speciality foundries is maintained at recent levels. Makers are able to dispose of a good proportion of their output, although in some instances stocks on hand are uncomfortably large. Hematite is in good supply and easily obtainable, while refined iron makers are searching for more business.

The demand for high-phosphorus pig-iron is low, and apart from the slightly increased business at some of the light foundries, there is no overall improvement. Output continues to exceed demand and comparatively large stocks are held at the furnaces. The jobbing foundries need more work and business at the textile foundries is patchy. Many of these foundries are now using a greater proportion of scrap in their mixtures, at the expense of pig-iron.

Business in heavy cast-iron and machinery scrap is good, but other grades are plentiful and demands sluggish. Foundry coke is coming forward satisfactorily while ganister, limestone, and firebricks are available as needed.

There is little change in the amount of business on hand at the re-rollers, and most mills continue to work well below capacity. Demand from home sources for small bars and light sections is disappointing and there is little export business to be obtained against the lower continental prices. Some re-rollers have fairly good orders for reinforcing bars.

Steel semis from home steelworks are plentiful, but demand cannot absorb the quantities available.

Non-ferrous Metals

Copper remains a good market on both sides of the Atlantic. In London the constant decline in the level of stocks has raised the possibility of a tight position developing for spot supplies and this has induced consumers to enter the market. Against a more general background, the chief apprehension was the reappearance of unsettled labour relations in Chile, while the recent disturbances in the Belgian Congo have not been forgotten. Accordingly, activity is brisk and the price for cash metal has risen sharply. Concentration of demand for nearby metal has widened the backwardation and there is no indication at the moment of this gap narrowing.

London is also under the favourable influence of the American market, where the custom smelters have raised their price to 30 cents with the Belgians following suit. On Monday two of the three major US producers advanced their quotation by 1 cent a pound up to the 30 cents level. Buyers in America are more frequent and demand is good. A bullish influence has been the labour dispute at Anaconda's mine in Chile, Potrerillos, which produces some 3,000 tons a month. The dispute was settled on Monday. Potrerillos is nearing the point of exhaustion and it is understood will close down around next June. Before that time, however, Anaconda will have its new mine, El Salvador, situated near Copiapo in Chile, in which it has invested $103,000,000 in production. This mine is planned to take the place of Potrerillos and may be in production next April.

Tin is a steady, though quiet, market both in London and in New York. Nevertheless, demand need not be large to send the price higher and with the steady buying apparent over the last few weeks the price in London is not far short of £770 a ton. In Singapore the price at the beginning of this week stood at $M388¾, the highest level reached since May, 1957. In London stocks are declining slowly and, in any event, it is to be remembered that the buffer stock manager holds the major proportion. In America demand is being maintained and the price is over $1 per pound.

The lead market has yet to recover from the full 1 cent drop in the US price last week. The market is dull and buying is sluggishly routine. It is now apparent that the US Government will have difficulty in disposing of any considerable tonnages through barter deals. The outlook remains bleak and the US price is 12 cents a pound. Zinc is a slightly better market than lead on both sides of the Atlantic. There is plenty of metal about to meet all demands. In the US the price is 11½ cents a pound.

The next meeting of the United Nations Sub-committee on lead and zinc to reconsider the possibility of international action on the two metals is now expected to take place some time next April.

New AEI Group Deals With Defence Projects

In view of the number of research, development, and production contracts placed with two of its subsidiary companies—the Metropolitan-Vickers Electrical Company, Limited, and the British Thomson-Houston Company, Limited—Associated Electrical Industries, Limited, has established a military electronic apparatus group, with headquarters at New Parks, Leicester.

The work undertaken is in connection with Government defence projects and includes development and manufacture of ground radar, certain types of airborne radar, IFF equipment, computers for military applications, position control servo-mechanisms, telemetry equipment, and a wide range of ancillary devices.

As well as new laboratories and administrative offices at New Parks, Leicester, additional manufacturing capacity has been built at the Blackbird Road Works to augment the existing facilities of the two subsidiary companies. Valves and semiconductor devices are developed and manufactured at new works and laboratories at Lincoln.

"Why no strikes in Steel?"

asks Margaret Stewart – and comes up with this cheerful answer

MARGARET STEWART *has been industrial correspondent of the News Chronicle since 1949, and before that was on the staff of The Economist. She is the first and only woman industrial correspondent of a national newspaper. She has also broadcast on current affairs for the BBC.*

Miss Stewart was educated at St. Leonards School, St. Andrews, and Newnham College, Cambridge, where she read Modern Languages and Economics.

Be ore entering journalism she was a research worker for the Nuffield Social Reconstruction Survey and prepared evidence for the Beveridge report on social insurance.

She has made a special study of industrial relations and trade union problems. So her remarks on Steel carry a good deal of weight, because she knows so much about the way other industries are faring.

IN MANY YEARS of industrial reporting, I have yet to come across an industry where there is such a "will to peace" as in Steel.

In 1957, more working days were lost through industrial disputes in Britain than in any year since 1926 – the year of the General Strike.

The Steel Industry can plead "Not Guilty". Industrial strife has passed it by, and it has not had a major strike, apart from the General Strike in 1926, for more than half a century.

Last year, there were serious stoppages in road and air transport, and in the docks. This year? Many TUC leaders have voiced the fear that there will be more strikes, because of the Government's decision to scrap compulsory arbitration.

ROUND A TABLE

But such fears are irrelevant to an industry where arbitration by outsiders is the last resort and not an integral part of industrial relations.

This does not mean that there are never any disputes in Steel. It means that both sides prefer to settle their differences round a table. They use their own well-tried conciliation machinery to the full.

This machinery is so good that when Steel was nationalised in 1949, nobody wanted to change it. *This is how it works:*

At the top are national agreements for each section of the industry. These fix minimum wages and such matters as hours, holidays and the cost of living sliding scale. Heavy steel usually sets the pattern, but agreements vary to suit each section.

MEN ON THE SPOT

At the bottom are plant-by-plant negotiations – undoubtedly the key to success. The men on the spot who work on the job, and know the local conditions, fix the rates for a particular machine, mill or furnace.

If a dispute cannot be settled locally, it goes to a neutral committee of four – two management and two union men, drawn from firms *not* concerned in the dispute but thoroughly understanding the job.

These neutral committees nearly always reach agreement. If not, the top officials on either side take a hand and see if they can suggest a solution. If they fail, then – and only then – the dispute will go to arbitration. One side never *forces* the other to arbitrate. It is done on jointly agreed terms of reference, and on the understanding the award will be accepted.

SQUARE DEALING

Many other industries have just as good machinery on paper, but it has not prevented strikes and unhappy labour relations.

Steel has a tradition of fair and square dealing. "We talk the same language and we trust each other," was how one big Steel executive described his relations with his men.

The unions, on their side, have for the past 90 years followed the maxim of one of their early pioneers: "Reason, not force, is the weapon men should use." Union leaders, at every level, exercise an effective discipline over their members, and insist, to the point of expulsion if need be, on the honouring of agreements.

Both sides can be tough. That is not surprising in an industry where the job is tough, the hours are tough, with round-the-clock working, and the product itself is tough. But both sides are conscious of the serious effects any loss of production would have in a highly capitalised industry, where each worker is backed by up to £10,000 worth of equipment.

In my view, the short answer to the question: "Why are there no strikes in Steel?" would be: "Men of Steel are Men of Sense."

This personal report was invited by the British Iron and Steel Federation, which believes that everyone in Britain should know the facts about Steel and about the men who make it.

Current Prices of Iron, Steel, and Non-ferrous Metals

(Delivered unless otherwise stated)

February 4, 1959

PIG-IRON

Foundry Iron.—No. 3 IRON, CLASS 2: Middlesbrough, £21 6s. 0d.; Birmingham, £20 18s. 3d.

Low-phosphorus Iron.—Over 0.10 to 0.75 per cent. P, £23 17s. 0d., delivered Birmingham. Staffordshire blast-furnace low-phosphorus foundry iron (0.10 to 0.50 per cent. P, up to 3 per cent. Si), d/d within 60 miles of Stafford, £24 1s. 3d.

Scotch Iron.—No. 3 foundry, £25 3s. 6d., d/d Grangemouth.

Cylinder and Refined Irons.—North Zone, £25 19s. 0d.; South Zone, £26 1s. 6d.

Refined Malleable.—P, 0.10 per cent. max.; North Zone, £27 6s. 6d.; South Zone, £27 9s. 0d.

Hematite.—Si up to 2 per cent., S. & P. over 0.03 to 0.05 per cent.: N.-E. of England (local iron), £25 6s. 6d.; Scotland (Scotch iron), Zone S.1, £25 13s. 0d.; Sheffield, £26 15s. 0d.; Birmingham, £27 4s. 0d.; Wales (Welsh iron), £25 6s. 6d.

Basic Pig-iron.—£20 3s. 0d., delivered Staffs, Derbyshire, Notts, Lincs, Rutland, Northants, and Leics.

FERRO-ALLOYS

(Per ton unless otherwise stated, delivered)

Ferro-silicon (6-ton lots and over).—45 per cent. Si, £41 0s. 0d. to £43 10s. 0d., scale 15s. 0d. per unit; 75 per cent. Si, £56 10s. 0d. to £60 10s. 0d., scale 15s. 0d. to 16s. 0d. per unit.

Ferro-vanadium.—50/60 per cent., 22s. 6d. per lb. of V.

Ferro-molybdenum.—65/70 per cent., carbon-free, 12s. 10d. per lb. of Mo.

Ferro-titanium.—20/25 per cent., 2-3 per cent. Cu, £250 0s. 0d.; 38/40 per cent., commercially carbon-free, £287 0s. 0d.

Ferro-tungsten.—80/85 per cent., 8s. 3d. per lb. of W.

Tungsten Metal Powder.—98/99 per cent., 11s. 3d. per lb. of W.

Ferro-chrome (6-ton lots and over).—4/6 per cent. C, £77 0s. 0d. to £81 0s. 0d., basis 60 per cent. Cr, scale 26s. 0d. to 27s. 6d. per unit; over 6 per cent. C, £74 10s. 0d. to £77 10s. 0d., basis 60 per cent. Cr, scale 26s. 0d. to 27s. 6d. per unit; 2 per cent. C,* 1s. 7½d. to 1s. 10½d. per lb. Cr; 1 per cent. C,* 1s. 8d. to 1s. 11d. per lb. Cr; 0.15 per cent. C,* 1s. 9d. to 2s. 0d. per lb. Cr; 0.10 per cent. C,* 1s. 9½d. to 2s. 0½d. per lb. Cr; 0.06 per cent. C,* 1s. 9½d. to 2s. 0½d. per lb. Cr.

Metallic Chromium.—98/99 per cent., 6s. 10d. per lb.

Metallic Manganese.—94/96 per cent., carbon-free, £255 0s. 0d.; 96/98 per cent., £285 0s. 0d.

Ferro-columbium.—65/72 per cent., Nb + Ta, 19s. 9d. per lb., Nb + Ta.

Ferro-manganese (home).—78 per cent., £73 0s. 0d.

SEMI-FINISHED STEEL

Re-rolling Billets, Blooms, and Slabs.—BASIC: Soft u.t. £32 15s. 0d.; tested, 0.08 to 0.33 per cent. C, £33 15s. 6d.; hard (0.41 to 0.60 per cent. C), £34 17s. 0d.; silico-manganese, £43 16s. 6d.; free-cutting, £36 14s. 6d. SIEMENS MARTIN ACID: Up to 0.25 per cent. C, £41 1s. 0d.; silico-manganese, £44 4s. 0d.

* Average 68-70 per cent.

Billets, Blooms, and Slabs for Forging and Stamping.—Basic, soft, up to 0.33 per cent. C, £38 10s. 0d.; basic hard, over 0.41 up to 0.60 per cent. C, £39 12s. 6d.; acid, up to 0.25 per cent. C, £43 4s. 0d.

FINISHED STEEL

Heavy Plates and Sections.—Ship plates (N.-E. Coast), £42 2s. 0d.; boiler plates (N.-E. Coast), £44 12s. 0d.; floor plates (N.-E. Coast), £43 11s. 0d.; angles (N.-E. Coast), £39 16s. 6d.; joists (N.-E. Coast), £39 12s. 6d.

Small Bars, Sheets, etc.—Rounds and squares, under 3 in., and flats 5 in. wide and under, untested soft basic, 50 tons and over, £40 0s. 6d.; under 10 tons to 4 tons, £40 18s. 0d.; under 4 tons to 2 tons, £41 3s. 0d.; hoop and strip, coils, £39 0s. 0d.; uncoated strip mill coils, hot rolled, under 3mm. to 12g., £44 16s. 0d.; black sheets (hand mill), 24g., £58 14s. 6d.; galvanized corrugated sheets, 24g., £67 10s. 0d.

Alloy Steel Bars.—1 in. dia. and up: Nickel, £68 10s. 0d.; nickel-chrome, £99 11s. 0d.; nickel-chrome-molybdenum, £111 19s. 0d.

NON-FERROUS METALS

Copper.—Cash, £235 0s. 0d. to £235 5s. 0d.; three months, £232 5s. 0d. to £232 10s. 0d.; settlement, £235 5s. 0d.

Copper Tubes, etc.—Solid-drawn tubes, 2s. 3½d. per lb.; rods, 244s. 0d. per cwt. basis; 20 s.w.g., 279s. 0d. per cwt.

Tin.—Cash, £768 0s. 0d. to £768 10s. 0d.; three months, £768 10s. 0d to £769 0s 0d; settlement, £768 10s. 0d.

Lead (Refined Pig).—First half February, £70 12s. 6d. to £70 15s. 0d.; first half May, £71 2s. 6d. to £71 5s. 0d.

Zinc.—First half February, £72 5s. 0d. to £72 7s. 6d.; first half May, £71 0s. 0d. to £71 5s. 0d.

Zinc Sheets, etc.—Sheets, 15g. and thicker, all English destinations, £107 10s. 0d.; rolled zinc (boiler plates), all English destinations, £105 5s. 0d.; zinc oxide (Red Seal), d/d buyers' premises, £95 10s. 0d.

Brass Tubes, etc.—Solid-drawn tubes, 1s. 10½d. per lb.; sheets to 10 w.g., 199s. 6d. per cwt.; wire, 2s. 8¼d.; rolled metal, 199s. 6d. per cwt.

Brass (Brazing).—BS1400, B3 (65/35), £151; B6 (85/15), —; BS249, —.

Brass (High Tensile).—BS1400, HTB1 (30 tons), £198; HTB2 (38 tons), £215; HTB3 (48 tons), — .

Gunmetal.—BS1400. LG2 (85/5/5/5). £188; LG2 (86/7/5/2), £199; G1 (88/10/2/½). £253; (88/10/2/1), —.

Phosphor Bronze.—BS1400, PB1 (AID released), £286 per ton.

Leaded Phosphor Bronze.—BS1400, LPB1 (1060), £207 per ton.

Phosphor Bronze Strip, etc.—Strip, 295s. 6d. per cwt.; wire, 4s. 1¼d. per lb.; rods, 3s. 4¾d.; tubes, 3s. 4¾d.; chill cast bars: solids 3s. 4¼d.; cored 3s. 5¼d. (CHARLES CLIFFORD, LIMITED.)

Nickel Silver, etc.—Rolled metal, 3 in. to 9 in. wide × 0.056, 3s. 9¾d. per lb.; round wire, 10g. in coils (10 per cent.), 4s. 2¾d.; special quality turning rod, 10 per cent., ½ in. dia., in straight lengths, 4s. 1¾d. All prices are net.

Other Metals.—Magnesium, ingots, 2s. 3d. per lb. Antimony, English, 99 per cent., £190 0s. 0d. Quicksilver, ex-warehouse, £74 0s. 0d. Nickel, £600 0s. 0d. Aluminium ingots, £180 0s. 0d.; aluminium bronze (BS1400), AB1, £225; AB2, —.

Obituary

Mr. WILLIAM PROCTOR, founder and senior partner of W. P. Wadsworth & Sons, precision engineers, of Bury (Lancs), died on January 20, at the age of 59.

The death occurred on January 18, at the age of 45, of Mr. J. BLAIR, proprietor of the Copse Road Foundry, Fleetwood. He had been in business for the past 11 years.

Mr. JOHN ALEXANDER, 58-year-old production manager of Hurst Nelson & Company, Limited, rolling-stock manufacturers, Motherwell, died on January 26. He collapsed at the wheel of the car in which he was taking his driving test.

Mr. H. N. DOWNING, governing director of N. Downing & Sons, Limited, ironfounders of Clarence Foundry, Stockton-on-Tees, has died at the age of 72. Son of the company's founder, he was a member of the Institute of Patentees.

Mr. STUART A. HIRST, for many years chairman of the Blackburn Aeroplane Company, Limited, died on January 24 at the age of 81. He was a founder of the Yorkshire Aeroplane Club and of the Leeds Publicity Club, and chairman of the Development Committee of Leeds Chamber of Commerce. He visited Canada early last year in connection with an export drive.

Mr. WILLIAM HENRY ATHERTON, a former engineering director of Ley's Malleable Castings Company, Limited, Derby, has died at the age of 91. He had been associated with the firm since 1905. After his retirement he remained as consultant to Ley's and the Ewart Chain Belt Company, Limited, which is an associate company of Ley's. Mr. Atherton, was a past-president of Derby Rotary Club, and a former president of the Derby Society of Engineers.

Mr. J. B. MAVOR, LL.D., a former chairman of Mavor & Coulson, Limited, Glasgow, and one of the leading designers of coal-cutting machinery, died on January 30 at the age of 69. He was a son of the founder of the firm, Mr. Henry Mavor, and succeeded his uncle, the late Mr. Sam Mavor, as managing director of the company in 1934. He became chairman in 1946 and retired in 1956. He was also a former chairman of the North British Locomotive Company, Glasgow, and among offices held by him were those of president of the Scottish Engineering Employers' Association, and the North West Engineering Trades Employers' Association.

Increases in Capital

STONE-PLATT INDUSTRIES, LIMITED (formerly Platt Bros. & Company (Holdings), Limited), Oldham, increased by £4,250,000, in £1 ordinary shares, beyond the registered capital of £7,250,000.

P. & O. RESEARCH & DEVELOPMENT COMPANY, LIMITED (formerly Roath Engineering Company, Limited), London, E.C.3, increased by £40,000, in £1 shares, beyond the registered capital of £10,000.

AVERYS, LIMITED, weighing machine manufacturers, etc., of Birmingham, increased by £1,750,000, in 1,366,685 ordinary and 383,315 unclassified shares of £1 each, beyond the registered capital of £3,250,000.

VICTOR PRODUCTS (WALLSEND), LIMITED, mining engineers, etc., of Wallsend (Northumberland), increased by £200,000, in 150,000 ordinary and 50,000 "A" ordinary shares of £1 each, beyond the registered capital of £300,000.

ANSELL JONES & COMPANY, LIMITED, metal founders, etc., of Walsall (Staffs), increased by £37,500 in 6,000 "A" ordinary, 8,000 "B" ordinary, and 23,500 "C" ordinary shares of £1 each, beyond the registered capital of £25,000.

LOW PHOSPHORUS
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LONDON, E.C.2.
Winchester House, Old Broad Street
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FERRO SILICON 12/14%
ALLOYS & BRIQUETTES
N.F. METALS & ALLOYS
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LIVERPOOL, 2.
13, Rumford St.,
Central 1558

GLASGOW, C.2.
93, Hope Street,
Central 9969

Imports and Exports of Iron and Steel in December

The following tables, based on Board of Trade returns, give figures of imports and exports of iron and steel in December, 1958. Totals for last year and 1957 are also included.

Total Exports of Iron and Steel

Destination.	Month ended Dec. 31.	Year ended December 31.	
	1958.	1957.	1958.
	Tons.	Tons.	Tons.
Channel Islands	414	3,711	4,602
Cyprus	95	12,155	5,492
Sierra Leone	477	12,910	11,789
Ghana	1,477	22,624	15,767
Nigeria	9,622	55,927	73,367
Union of South Africa	6,623	117,432	105,065
Rhodesia and Nyasaland	1,695	69,379	32,288
Tanganyika	6,244	22,663	20,060
Kenya	3,957	55,092	41,424
Uganda	520	4,109	3,447
Mauritius	567	3,522	3,755
Aden	102	4,621	2,785
Bahrein, Qatar, and Trucial States	842	17,121	9,433
Kuwait	3,571	35,690	41,163
India	17,538	214,459	152,657
Pakistan	4,050	72,815	53,834
Singapore	1,744	40,477	32,777
Malaya	1,069	31,661	15,637
Ceylon	1,634	27,913	30,147
British North Borneo	449	4,008	2,311
Hongkong	5,758	78,448	59,357
Australia	11,403	184,567	107,891
New Zealand	14,632	215,780	188,846
Canada	16,045	276,856	189,411
Jamaica	2,640	27,144	22,440
Trinidad	4,546	52,773	50,794
British Guiana	235	7,785	6,598
Other Commonwealth countries	9,018	27,968	51,719
Eire	4,386	48,100	49,661
Finland	3,507	83,984	49,544
Sweden	14,154	108,440	125,656
Norway	6,665	103,856	91,953
Denmark	6,286	104,139	83,871
Western Germany	10,596	9,600	62,907
Netherlands	8,027	95,543	81,943
Belgium	1,558	43,895	38,364
France	342	14,944	4,375
Switzerland	349	16,242	9,127
Portugal	2,406	16,935	15,283
Spain	1,150	38,448	41,450
Italy	2,971	53,439	47,596
Austria	347	7,142	9,063
Yugoslavia	628	11,161	4,643
Greece	871	12,547	12,754
Turkey	19	9,158	4,118
Netherlands Antilles	244	3,164	2,205
Portuguese East Africa	94	4,227	2,589
Egypt	287	13,116	12,697
Sudan	890	22,137	32,434
Lebanon	58	18,669	8,702
Israel	850	4,446	9,945
Saudi Arabia	16	4,636	3,829
Iraq	3,447	39,124	41,422
Iran	1,410	59,736	38,179
Burma	986	23,962	11,983
Thailand	300	7,602	6,769
Indonesia	154	6,939	2,287
Philippine Republic	179	7,470	3,575
USA	7,440	48,667	87,422
Cuba	1,007	8,326	6,731
Colombia	227	10,217	5,491
Venezuela	12,465	114,088	73,125
Ecuador	87	3,022	2,298
Peru	399	13,593	9,925
Uruguay	72	6,795	921
Argentina	35,823	118,373	155,592
Other foreign countries	21,163	143,549	181,162
TOTAL	278,807	3,159,041	2,766,447

Total Imports of Iron and Steel

From	Month ended Dec. 31.	Year ended December 31.	
	1958.	1957.	1958.
	Tons.	Tons.	Tons.
Rhodesia and Nyasaland	556	5,742	6,183
Canada	2,317	45,984	22,667
Other Commonwealth countries and Eire	2,656	23,316	23,283
Soviet Union	—	236,418	108,945
Sweden	2,502	34,230	34,654
Norway	5,763	119,148	71,525
Poland	—	7,546	319
Western Germany	2,467	107,125	66,443
Netherlands	11,054	77,163	147,704
Belgium	917	142,229	88,505
Luxembourg	90	23,980	6,124
France	1,451	69,475	18,967
Italy	58	4,058	7,107
Austria	70	59,985	3,840
Japan	532	14,668	3,683
USA	560	293,344	115,377
Other foreign countries	603	19,990	7,963
TOTAL	31,596	1,284,401	733,289
Iron and steel scrap and waste, fit only for the recovery of metal	1,266	665,626	64,822

Exports of Iron and Steel, by Products

Product.	Month ended Dec. 31.	Year ended December 31.	
	1958.	1957.	1958.
	Tons.	Tons.	Tons.
Pig-iron	16,693	129,134	151,684
Ferro-columbium (niobium)	3	82	37
Ferro-tungsten	174	561	978
Other ferro-alloys	172	3,283	3,468
Ingots, blooms, billets, slabs, sheets, and tinplate bars	5,243	4,449	21,746
Iron bars, rods, angles, shapes, and sections	64	1,825	1,690
Steel bars, rods, angles, sections, and shapes	30,810	500,927	336,565
Iron plates and sheets	271	104	1,976
Universal plates	45	6,300	4,356
Steel plates, ⅛ in. and under ¼ in.	1,840	11,035	10,015
Ditto, ¼ in. and over	12,860	189,061	172,728
Blacksheets and blackplate	30,928	352,752	295,893
Hoop and strip	8,621	87,915	80,511
Tinplate	49,791	408,568	414,098
Decorated tinplate	1,368	5,006	6,972
Galvanized sheets	10,207	176,705	87,635
Other (incl. tinned sheets, terneplate, and ternesheets)	1,052	19,125	13,645
Railway and tramway construction material	22,500	269,539	245,295
Wire rods of steel (incl. alloy steel)*	3,265	54,841	48,897
Wire	8,979	107,989	102,714
Tubes, pipes, and fittings	72,944	816,945	745,835
Iron castings	275	1,680	10,156
Steel castings	209	2,803	2,350
Forgings	493	8,412	7,203
TOTAL	278,807	3,159,041	2,766,447

* The figures for 1958 are not completely comparable with those for previous years.

Mr. D. C. LORKIN, managing director of the Lancashire Dynamo group, presented 11 long-service awards to employees of Malcolm & Allan (London), Limited, at a dinner and dance held to mark the company's 50th year.

SIMMONDS AEROCESSORIES, LIMITED, Treforest, Glamorgan, are exhibiting the full range of Surform hand tools at the Hardware Trades Fair (Stand 127), which is being held at Olympia until February 6.